PROCEEDINGS

OF THE

American Pharmaceutical Association

AT THE

TWENTY-FIRST ANNUAL MEETING,

HELD IN

RICHMOND, VA.,

SEPTEMBER, 1873.

ALSO THE

CONSTITUTION AND ROLL OF MEMBERS.

PHILADELPHIA:
SHERMAN & CO., PRINTERS.
1874.

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1873-74.

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*** In writing the footnote on page 55, the name of Mr. William P. Keffer was mistaken for Fr. A. Keffer, M.D., the last-named member being deceased.—Editor.**

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* By reference to page 92 of this volume, it will be noticed that the delegations of those incorporated colleges (and associations) which are not represented in the above committee, have been requested to nominate one member to serve on the Permanent Committee on the Pharmacopœia.—EDITOR.

List of Officers of the Association

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(*Deceased in Italics.*)

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Peter W. Bedford,	New York,	1860–62

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REPORTER ON PROGRESS OF PHARMACY.

C. Lewis Diehl, ...	Louisville, Ky., . .	1873–74

PROPOSED AMENDMENTS TO THE BY-LAWS.

To be Acted on at the Twenty-Second Annual Meeting.

Amend Chapter II, Article I, so as to alter the sum of $500 to $600.

Amend Chapter IV, Article IV, so as to alter the sum of $300 to $400.

(Proposed by Dr. E. R. Squibb, at the fifth session of the Twenty-First Annual Meeting. See page 96.)

LIST OF QUERIES

TO BE ANSWERED AT THE TWENTY-SECOND ANNUAL MEETING, IN 1874, AT LOUISVILLE, KY.

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1. American Extract of Licorice is regarded, by a recent investigator, as of superior quality, and is found to yield a large percentage to water. Does not such extract contain an admixture of Gum or Dextrin?

Accepted by Adolph W. Miller, Philadelphia.

2. Recent examinations of commercial Bismuth preparations in Europe have determined the presence of appreciable quantities of silver in them. Do the bismuth preparations in this country contain any Silver, and are they free from Arsenic?

Accepted by Joseph H. Feemster, Cincinnati.

3. What is the solubility of commercial Sulphate of Morphia in water?

Accepted by M. L. M. Peixotto, New York.

4. Commercial Sulphate of Potassium, in the European markets, is stated to contain a large percentage of Sulphate of Sodium. Is this true of the Sulphate found in the American markets?

Accepted by P. W. Bedford, New York.

5. What is Cincho-quinine?

Referred to Albert E. Ebert, Chicago.

6. What is Bro mo-chloralum?

Referred to S. S. Garrigues, East Saginaw, Mich.

7. An essay on the botanical and chemical character of American Nutgalls.

Referred to E. S. Wayne, Cincinnati.

8. Powdered Blue Mass. What is an easy and convenient mode of preparing a mercurial powder to fully represent the officinal Blue Pill?

Accepted by John F. Hancock, Baltimore.

9. Medicated Waters. How do the waters prepared from the oils with Magnesia compare with those distilled from the fresh ingredients?

Accepted by N. H. Jennings, Baltimore.

10. The relation of Physician and Pharmacist. Is the pecuniary compensation of the Pharmacist adequate in comparison with that of the Physician?

Accepted by E. P. Nichols, M.D., Newark, N. J.

11. Oleate of Mercury has lately occupied the attention of pharmacists, and many processes for its preparation have been proposed. How may Oleic Acid be readily and rapidly prepared, in a condition sufficiently pure for preparing Oleate of Mercury?

Referred to Charles Rice, New York.

12. An essay on the preparation of the various bromides of the organic and inorganic bases used in American pharmacy.

Accepted by Charles Bullock, Philadelphia.

13. What is the relative quantity of Extract of Quassia prepared with water and prepared with dilute Alcohol?

Accepted by Joseph S. Whall, Boston, Mass.

14. What is the minimum quantity of Gum Arabic that can be used to emulsify perfectly the fixed oils, volatile oils, and balsams?

Accepted by C. M. Helman, Cincinnati, Ohio.

15. Can the formula for Scammony Resin (U. S. P.) be improved, and what is the objection, if any, to the exhaustion of Scammony by Alcohol at ordinary temperature and simple evaporation of the tincture?

Accepted by Prof. George F. H. Markoe, Boston, Mass.

16. What is the most desirable solution of Quinia for hypodermic injection?

Accepted by A. P. Sharp, Baltimore.

17. Why do some of the diluted Phosphoric Acids of the market form precipitates with tincture of Chloride of Iron, while others do not?

Accepted by Louis Dohme, Baltimore.

18. When equal volumes of tincture of Gelsemium and Nitric Acid are mixed, violent effervescence results, with evolution of nitrous fumes, diminution of volume, and some loss of color. What is the cause and what the chemical result of the reaction?

Referred to Charles C. Fredigke, Chicago.

19. What are the advantages of making Suppositories by moulding over the method of making them by hand?

Accepted by George W. Kennedy, Pottsville, Pa.

20. An examination of commercial Carbonates of Magnesium for Carbonated Alkalies.

Accepted by P. W. Bedford, New York.

21. An essay on Pancreatin, and the various pancreatic preparations in use.

Accepted by F. E. Heydenreich, Brooklyn, N. Y.

22. Does water extract all the purgative principles of Rhubarb, and is the alcoholic percolate of rhubarb, after its exhaustion with water, inert?

Accepted by Charles A. Heinitsh, Lancaster, Pa.

23. An essay on the active constituents of Bitter Orange-peel, with special reference to the bitter principle.

Accepted by R. H. Stabler, M.D., Alexandria, Va.

24. An examination of commercial Benzoin. What amount of impurity does it contain, and what are the relative proportions of benzoic and cinnamic acid?

Accepted by W. H. Brill, Allegheny, Pa.

25. A comparative examination of the juice of the root and of the flower-stems of Taraxacum dens-leonis.

Accepted by S. Mason McCollin, Philadelphia.

26. There is a petroleum product called Cosmoline, having claims to considerable merit. Can its claims be established by experience, and to what pharmaceutical uses can it be put?

Accepted by Joseph L. Lemberger, Lebanon, Pa.

27. How do the Ergots from the grasses, barley, wheat, oats, &c., compare with the Ergot from rye in medicinal effect?

Accepted by Dr. J. A. Miller, Harrisburg.

28. Can a permanent consistency and specific gravity be imparted to solid extracts by the addition of Glycerin, without injuring their quality?

Accepted by Prof. O. Oldberg, Washington, D. C.

29. What preference is shown to graduates in Pharmacy, as compared with non-graduates, and how do their salaries compare?

Accepted by P. Balluff, New York.

30. How do the salaries of drug clerks compare with the salaries of clerks in other business, and with those of skilled mechanics?

Accepted by H. N. Rittenhouse, Philadelphia.

31. Can statistics be obtained of the number of druggists in the United States, and can they be classified into a few general classes?

Accepted by B. F. Stacey, Charlestown, Mass.

32. An essay on Calabar Bean, giving the readiest method of obtaining the various pharmaceutical preparations, and isolating its active principle.

Accepted by G. W. Kennedy, Pottsville, Pa.

33. What is the quality of the Iron by Hydrogen of the market?

Accepted by J. L. A. Creuse, Brooklyn, N. Y.

34. What is the character of the principle to which the bitterness of Eupatorium perfoliatum is due?

Accepted by A. Boyd, Utica, O.

35. What is the state of purity of commercial Santonin obtained from various sources?

Accepted by Frederick Hoffmann, New York.

36. Can the Alkaloids of Cinchona be extracted together in a crude form, yet sufficiently pure to permit a ready detection of adulterants; and if so, can the process be profitably carried out by the pharmacist?

Accepted by Randal Rickey, Trenton, N. J.

37. Medicinal Soap. Mr. G. H. Barkhausen gives, in *Archiv der Pharmacie*, pp. 20–21, January, 1873, a process for preparing medicinal soap, as follows: 100 parts of olive oil are mixed with 150 parts of an alcoholic solution of caustic soda, containing 12 parts of the latter. The mixture is heated to 212° F. until solution is effected, 200 to 300 parts of water are added, and the solution is evaporated to dryness. One of the advantages claimed is that it contains a minimum quantity of alkali. Can this soap be substituted with advantage for Castile soap in the preparations of our Pharmacopœia, into which soap enters as a constituent?

Accepted by A. N. Marion, Baltimore.

38. An examination of commercial Citrate of Iron and Quinia for its quinia strength.

Accepted by Linus D. Drury, Boston, Mass.

39. An essay on Granulated Effervescent Compounds.

Accepted by R. V. Mattison, Philadelphia.

40. How may concentrated preparations from Aromatic Drugs be best prepared, so that the preparation shall be permanent, and represent all the active constituents of the drug?

Accepted by Prof. George F. H. Markoe, Boston, Mass.

41. What is the comparative medicinal value of Wild (field) Garlic of the United States and the Allium sativum, and is alcohol (as recommended by A. P. Sharp) the best agent for preserving garlic; if so, how can it be used so as to leave the appearance of the bulb unchanged?

Continued to Wallace Procter, Philadelphia.

42. What merit has Petroleum Benzin as a solvent for the extraction of oleo-resinous drugs like chenopodium, &c.?

Continued to Joseph P. Remington, Philadelphia.

43. Does not the acknowledged value of Colchicum, and its liability to vary in activity, suggest the preparation of a working formula for medicinal colchicia as a new pharmaceutical?

Continued to Ottmar Eberbach, Ann Arbor, Mich.

44. What is the best fluid preparation of Tartrate of Iron and Potassium for dispensing that will keep well?

Continued to C. Hohly, Toledo, Ohio.

45. What is the actual value of Orange-colored Window Glass as a means of preventing the chemical action of light on volatile oils?

Continued to Prof. Wm. Procter, Jr., Philadelphia.

46. Is Chicory Root used as an adulteration or substitution for Taraxacum in American commerce?

Continued to L. M. Royce, New York.

47. An essay, suggestive and critical, on the best plan of arranging and managing the store-rooms and cellar of a well-conducted dispensing store.

Continued to J. F. Hancock, Baltimore.

48. An essay on cleanliness as a pharmaceutical virtue, and specially on the means and methods of cleaning bottles, mortars, and vessels of all kinds in daily or occasional use.

Continued to J. M. Ayers, Cincinnati, Ohio.

49. How do the Subnitrate and Subcarbonate of Bismuth of commerce compare with the standard of the U. S. Pharmacopœia?

Continued to Thomas F. Main, New York.

50. What is the purity and state of hydration of the Burnt Alum found in the market, and is it prepared from Ammonia or Potassa Alum?

Continued to Thomas Starr, New York.

51. What are the degrees of strength and the purity of the so-called chemically pure Mineral Acids of the different manufacturers?

Continued to P. W. Bedford, New York.

52. The berries and root of the Phytolacca decandra possess value as a remedy in rheumatism. To what principle can this property be attributed?

Continued to Charles C. Fredigke, Chicago. Ill.

CONTENTS.

Reports of Committees.

Special and Volunteer Reports and Essays.

PREFATORY NOTICE.

The undersigned take pleasure in presenting this volume at about the same period of the year as former issues, notwithstanding the increased size and an unexpected delay of several weeks. It is more than a month behind the time we expected to see it in the hands of every member, though as compared with former years, the volume is really issued earlier taking into consideration that it is the largest volume of Proceedings and Reports ever published by the Association.

With very few exceptions, all the reports and papers presented at Richmond are here published. It is particularly gratifying that the Report on the Progress of Pharmacy again appears this year, and that the gap occasioned by the failure of the report for the preceding year is partly, perhaps nearly, filled up by the report of Mr. Mercein, and by the selection as made by Professor Diehl. The appointment of the latter gentleman as Reporter on the Progress of Pharmacy (see pages 35 to 38), will in the future insure full reports at each annual meeting.

The Report on Elixirs has been sent in January, 1874, to all the Medical and Pharmaceutical Societies in the United States and Canada, whose address could be ascertained by the Secretary. At that time it was expected that, before these reports could be laid before the Societies addressed and action taken thereon, the Proceedings would be in the hands of every member. In this expectation the Secretary was disappointed as stated above; but a sufficient number of extra copies of the report had been printed to supply all members applying for the same.

The report suggesting arrangements for the meeting to be held in 1876, will be found on page 65. As it has not been acted on, it may be called up at the next or succeeding meeting, and all members who have any suggestions to make, would do well to present them if possible in writing, at the next meeting. The next (fourth) International Pharmaceutical Congress will be held in St. Petersburg, Russia, in August next, and it will devolve upon the proper officers to lay the wishes of our Association before the Congress. The document announcing the month of that International Meeting, is dated at St. Petersburg, January 15–27, 1874.

It is scarcely necessary to draw special attention to the many interesting facts and valuable suggestions contained in most other committee reports and individual essays. Among the latter are contained the last papers on pharmaceutical subjects, written by Professor William Procter, Jr., who suddenly died early on the 10th of February. He was one of the founders of our As-

sociation; what he has been to Pharmacy and particularly to Pharmacy in this country, is well known to our members.

The several issues of the Proceedings will be furnished at the following prices, which *include* the postage:

1851, 1852, 1853, 1855,	unbound,	$0.25 each.				
1857,	"	0.50		bound,	$0.80.	
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1854 and 1856 out of print; none published in 1861.

The entire set of bound volumes, the first four in paper covers, will be furnished at $32.50; the set of unbound volumes, including the bound ones for 1860, 1862, 1863, are held at $26. The prices for entire sets are *exclusive of postage or express charges.*

The Twenty-second Annual Meeting will be held in the City of Louisville, Ky., on the second Tuesday of September, 1874, at 3 o'clock P.M.

THOMAS S. WIEGAND,
Chairman of the Executive Committee, 528 Arch St., Philadelphia.

JOHN M. MAISCH,
Permanent Secretary, 145 North Tenth St., Philadelphia.

List of Members

IN ATTENDANCE AT THE TWENTY-FIRST ANNUAL MEETING.

Joseph Anthony, Richmond, Va.
Charles W. Badger, Newark, N. J.
T. Roberts Baker, Richmond, Va.
Paul Balluff, New York.
A. R. Bayley, Cambridgeport, Mass.
P. W. Bedford, New York.
Ira W. Blunt, Richmond, Va.
E. L. Boggs, Charleston, W. Va.
D. J. Bossler, Philadelphia, Pa.
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A. Boyd, Utica, Ohio.
Ashel Boyden, Boston, Mass.
William H. Brill, Allegheny, Pa.
John T. Buck, Jackson, Miss.
Charles Bullock, Philadelphia, Pa.
William B. Burk, "
George E. Cook, Port Jervis, N. Y.
Edward A. Cornell, Williamsport, Pa.
Charles H. Cressler, Chambersburg, Pa.
J. Creuse, Brooklyn, N. Y.
J. M. Cubbiston, New Castle, Pa.
C. Lewis Diehl, Louisville, Ky.
Louis Dohme, Baltimore, Md.
Ernest Dreher, Newark, N. J.
Albert E. Ebert, Chicago, Ill.
Charles Eimer, New York.
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J. J. Estes, East Abington, Mass.
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J. C. P. Fulton, Brooklyn, N. Y.
Robert W. Gardner, Jersey City, N. J.
S. S. Garrigues, East Saginaw, Mich.
Samuel Gerhard, Philadelphia, Pa.
John W. Goodwin, Petersburg, Va.
M. C. Hall, Fredericksburg, Va.
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Charles M. Helman, Cincinnati, Ohio.
F. V. Heydenreich, Brooklyn, N. Y.
Emil Heydenreich, "
William Heyser, Chambersburg, Pa.
Frederick Hoffmann, New York.
Clay W. Holmes, Wilkesbarre, Pa.
W. F. Horton, Boston, Mass.
N. Hynson Jennings, Baltimore, Md.
Edward C. Jones, Philadelphia, Pa.
P. R. Jones, Danville, Va.
Isaac H. Kay, Philadelphia, Pa.
George W. Kennedy, Pottsville, Pa.
A. A. Kleinschmidt, Baltimore, Md.
A. S. Lee, Raleigh, N. C.
George Leis, Lawrence, Kan.
Joseph L. Lemberger, Lebanon, Pa.
Benjamin Lillard, Nashville, Tenn.
G. J. Luhn, Charleston, S. C.
Harrison S. Lutz, Allegheny, Pa.
John M. Maisch, Philadelphia, Pa.
John R. Major, Washington, D. C.
Alfred N. Marion, Baltimore, Md.
George F. H. Markoe, Boston, Mass.
Frederick H. Masi, Norfolk, Va.

R. V. Mattison, Philadelphia, Pa.
S. M. McCollin, "
R. H. Meade, Richmond, Va.
H. J. Menninger, Raleigh, N. C.
J. A. Meyers, Columbia, Pa.
John A. Milburn, Washington, D. C.
Adolph W. Miller, Philadelphia, Pa.
J. A. Miller, Harrisburg, Pa.
Polk Miller, Richmond, Va.
William Neergard, New York.
O. Neustadt, New York.
Edward P. Nichols, Newark, N. J.
A. W. Nolting, Richmond, Va.
Oscar Oldberg, Washington, D. C.
Joel S. Orne, Cambridgeport, Mass.
I. B. Patten, Boston, Mass.
W. A. Patton, Catlettsburg, Ky.
John W. Pierce, Richmond, Va.
M. L. M. Peixotto, New York.
G. Pfingsten, New York.
Wilson H. Pile, Philadelphia, Pa.
G. G. Porter, New York.
Wm. Procter, Jr., Philadelphia, Pa.
John B. Purcell, Richmond, Va.
B. H. Reinold, New York.
Joseph P. Remington, Philadelphia, Pa.
Randal Rickey, Trenton, N. J.
H. N. Rittenhouse, Philadelphia, Pa.
Alonzo Robbins, Philadelphia, Pa.
W. H. Rogers, Middletown, N. Y.
William Saunders, London, Ont.
A. A. Scott, Richmond, Va.
William H. Scott, Richmond, Va.
William Simpson, Raleigh, N. C.
E. R. Squibb, Brooklyn, N. Y.
B. F. Stacey, Charlestown, Mass.
Thomas Starr, New York.
J. H. Stein Reading, Pa.
W. S. Thompson, Washington, D. C.
Charles A. Tufts, Dover, N. H.
R. W. Vandervoort, Newark, N. J.
William Vincent, Brooklyn, N. Y.
H. A. Vogelbach, Philadelphia, Pa.
Lewis Wagner, Richmond, Va.
James Weaver, New York.
J. D. Wells, Cincinnati, Ohio.
H. E. Wendel, Philadelphia, Pa.
A. S. White, Mount Holly, N. J.
B. O. Wilson, Boston, Mass.
Robert B. Wood, Richmond, Va.
J. W. Worthington, Moorestown, N. J.

MINUTES

OF THE

TWENTY-FIRST ANNUAL MEETING.

First Session—Tuesday, September 16th, 1873.

THE Twenty-first Annual Meeting of the American Pharmaceutical Association convened in the Virginia Opera House, in the City of Richmond, Va., on the afternoon of Tuesday, September 16th, 1873. President Albert E. Ebert occupied the chair; John M. Maisch, Secretary.

More than a quorum of members being in attendance, and in the presence of a large number of ladies and visitors, the President, at 3½ o'clock, called the meeting to order, with the following remarks:

It becomes my pleasant duty to announce that the time has now arrived for the opening of the Twenty-first Annual Meeting of the American Pharmaceutical Association, and in so doing, I would say, that by a happy coincidence, the Tenth Annual Meeting of the British Pharmaceutical Conference, and the Twelfth Annual Meeting of the Austrian General Apothecaries' Association at Vienna, will take place at the same time as our own meeting. It affords us, to-day, the opportunity of extending to each of these contemporary associations our congratulations and good wishes. Distance cannot diminish the great interest we feel in the deliberations of these fellow-workers, and in their efforts to advance the cause of Pharmacy, nor fail to inspire us with greater zeal in the work we have at heart. We are in receipt of a telegram by the Atlantic cable, from the British Pharmaceutical Conference, dated September 16th:

"To the President of the American Pharmaceutical Association, Richmond, Va., U. S. Our members send fraternal greetings to yours." (Signed) "The President of the British Pharmaceutical Conference, at Bradford." Your President, in consultation with the Secretary and Treasurer, not wishing to cause any delay in replying, have taken upon themselves the liberty of replying to this this morning. The reply reads:

"To the President of the British Pharmaceutical Conference, at Bradford, England: We return our hearty and fraternal greetings. The President of the American Pharmaceutical Association."

On this occasion, ladies and gentlemen and members of the American Pharmaceutical Association, it becomes my pleasure to introduce to you Hon. A. M. Keiley, the Mayor of the City of Richmond.

His honor, the Mayor, stepped forward and addressed the meeting as follows:

MR. PRESIDENT AND GENTLEMEN OF THE CONVENTION: It is idle to say that I discharge a very pleasant office in welcoming to our city an Association of the size and respectability, and above all, of the beneficent aims of the American Pharmaceutical Association. The choice which gives to Richmond the honor of this, your twenty-first annual assembly, gentlemen, is all the more complimentary, in view of the fact that out of an aggregate roll of a thousand, I understand that Richmond possesses but three active members of this organization. In other words, although there are far fewer righteous in this city than would have sufficed to save Sodom, we attain favor in your eyes. In this connection I desire especially to return the thanks of the people of Richmond to Professor Procter, who so zealously, so successfully, and so generously championed the cause of our city in your recent annual convention at Cleveland; and to Professor Hickley, who, with very inspiration in the midst of the controversy, raised the historic cry, "On to Richmond!" thus settling, as it would seem, the controversy as to a place of meeting. I trust that you have found your advance somewhat less arduous and costly, and less fatal than a similar experiment made some short time back. I may also, sir, be indulged in expressing a hope that this fraternal union of intelligent gentlemen from all quarters of our common country assembling in this capital of the late Confederacy in the interests of the healing art, may fortunately have some effect as a fraternal contribution to the healing of those sad civil wounds so long and so improperly kept open, which the selfishness and the greed and ambition of men has thus irritated, that profit and advantage might be reaped from the tree of public calamity and strife. I trust, gentlemen, that you may in some sort bring healing on your wings to this great people. It would, of course, be an impertinence for me to speak in regard to the details of your organization, but in respect to its general scope there is something that I think all citizens are interested in, and of which all may speak and think with profit; for if I understand your purpose aright, you are not here simply to compare your experiences, to consult as to the best methods of preparation, to search out the active principles of those great remedial agents of which the catalogue of nature is so full, to thrust, as it were, the keen sickle of experiment into every field of human industry, and endeavor that you may extract from all the earth, sea, and air, something to aid in the great, the divine art of healing human ills and prolonging human life; but you are also, if I understand your annual proceedings correctly, you are also here to do more than this,—to raise the standard of professional responsibility and attainment, to

stimulate a more thorough scientific culture, to set the seal of your reprobation upon those who are taking short cuts to wealth in your profession, who think that profit lies not in the perfection, but in the debasing of production. In other words, you are raising the great banner of business morality in this country, in an age and in a country whose besetting public vice is unconscientiousness. This is an honor to you, and is something in which we are all vitally concerned; and thus it happens, gentlemen, that it may be said of your pursuit as of almost no other in the land, that its honors are oftentimes taken from the great and wealthy, and amply endowed, by some patient laborer who, in a modest workshop and with moderate means, gives his time, and his thoughts, and his assiduous toil to the elaboration of the best, regardless of what may be the cheapest, sparing no pains, slighting no test, regardful of no toil, that he may pursue excellence, regardless entirely of profit. But, gentlemen, what a field there is for your profession. Two centuries ago the world burst into laughter, and has since frequently renewed it, at the pharmacopœia of Dr. Sangrado, whose first remedy, you recollect, was bloodletting, whose second remedy was warm water, and who had no third. People regarded this as simply the witty exaggeration of the humorous author of Gil Blas; but if you substitute calomel for warm water (and there are intelligent gentlemen who would regard the change as a pernicious one), you have the phrase in which the most celebrated of American physicians once formulated in practice. But the world has moved since Dr. Rush died sixty years ago, and moved nowhere with more obvious and decided advance than in the school of pharmacy.

But I am admonished that I am trespassing the very narrow limits of my proper duty here to-day. I cannot, however, close, Mr. President, without congratulating this Association on having attained its twenty-first birthday in Richmond; and now that you have got your majority here, we propose to naturalize you all as citizens of the Old Dominion forever. Nor can I hesitate to thank you, for the capital taste which induced you to bring these fair representatives of your art also among us. I do not care what the Association of the ladies may be, they are a drug in no market. The most miserable bachelor, who, in his solitary den, declaims against all women as a dose, must in this presence admit that at least they are sugar-coated; and if some miserable plodding wretch of a man should dare to denounce them as precipitate, here is an audience that knows the value of precipitates, I am sure. The fact is, Mr. President, that in this dull prosaic life, these are our elixir, and you do not dare to call them unofficinal.

But, sir, I fear I should grow professional, if I continued. I return again to you my hearty thanks on behalf of Richmond for this honor, and welcome you to the hospitalities of Richmond.

The address was listened to with great attention and the speaker was frequently interrupted by applause. After the conclusion of this address of welcome, the President returned thanks, and said:

THE PRESIDENT.—Ladies and gentlemen, all I can say, in behalf of the

Association, after the eloquent remarks of the Mayor, is that we tender our hearty thanks for the hospitality that has been extended to us by the citizens of Richmond.

The President appointed the following Committee on Credentials: Professor Procter, of Philadelphia; Mr. George Leis, of Lawrence, Kansas; and Professor Markoe, of Boston.

Mr. Balluff, for the Business Committee, moved that Professor Pratt, of the Washington Lee University of Lexington, Va., at present sojourning in Richmond, be invited to a seat in the present meeting; also to invite the Faculty of the Virginia Medical College, and the members of the medical profession in general to seats in this meeting. Both resolutions were carried unanimously.

A special invitation was extended to the public to visit the exhibition of objects relating to pharmacy, on the evening of Wednesday, September 17th, between the hours of 7½ and 9½ o'clock.

Dr. Menninger, acting chairman of the Executive Committee, reported the names of the following fifty-one candidates for membership, all having complied with the requirements of the By-laws:

Alabama.

Charles Scott Brown, Mobile.

Arkansas.

C. N. Rockafellow, Hot Springs.

California.

John Henry Flint, Marysville, Yuba County.

Connecticut.

Howard E. Gates, Litchfield.
Henry Kelsey, Jr., New Haven.
Dwight Phelps, West Winstead.

Illinois.

Charles W. Day, Urbanna, Champaign County.

Kentucky.

W. A. Patton, Catlettsburg.

Louisiana.

J. M. Delavallade, Plaquemine.

Maryland.

Charles S. Adams, Baltimore.
A. Francis Owens, Rockville, Montgomery County.

Massachusetts.

Charles W. Drake, Middleboro.
Alvin E. Holt, Southbridge.
Charles H. Lawton, New Bedford.
Horace A. Lawton, "
T. Edward Masters, Springfield.
Alfred J. Preston, "
John Redfearn, Fall River.
J. T. Webber, Springfield.
Joseph O. Wild, Holyoke.
Howard E. Wilson, Springfield.

New Hampshire.

George J. Appleton, Keene.

New Jersey.

Charles Holzhauer, Newark.
William McCarty, Morristown.

New York.

Charles H. Althans, Brooklyn.
Hermon W. Atwood, New York.
Edward A. Fraser, "
J. C. P. Fulton, Brooklyn.
John Hepburn, Flushing.
Philip Kuhles, New York.
James Mingay, Saratoga Springs.
Otto Neustadt, New York.
Oscar C. Weinman, New York.

North Carolina.

A. S. Lee, Raleigh.
William Simpson, Raleigh.

Pennsylvania.

George W. Carpenter, Philadelphia.
E. A. Cornell, Williamsport.
James M. Cubbison, New Castle.
Charles T. George, Harrisburg.
Clay W. Holmes, Wilkesbarre.
H. G. Keasbey, Philadelphia.
Richard V. Mattison, Philadelphia.
J. A. Miller, M.D., Harrisburg.
John A. Weaver, Easton.
H. Edward Wendel, Philadelphia.
William N. Williams, Danville.

South Carolina.

G. J. Luhn, Charleston.

Virginia.

T. Roberts Baker, Richmond.
P. R. Jones, Danville.
Frederick H. Masi, Norfolk.
Richard H. Meade, Richmond.

Mr. Bullock.—I move that the President be instructed to cast a vote for all the candidates.

The President.—We have heretofore always balloted for the members proposed; each member has the privilege of ballot. However, if there is no objection to this motion, the President may be empowered to cast the vote.

Mr. Bullock's motion was carried unanimously, and the candidates were declared elected, Messrs. E. C. Jones and S. M. McCollin having acted as tellers.

On motion of Mr. Peixotto, the bill for sending the telegram to the British Pharmaceutical Conference was ordered to be paid by the Treasurer.

The Executive Committee reported the following additional names of candidates for membership, whose applications had been examined and were found to be in accordance with the By-laws:

Ira W. Blunt, Richmond, Va.
Theodor Christiani, Washington, D.C.
Walter De Forest Day, M.D., N. Y.
Samuel H. Lunt, Alexandria, Va.
Henry Mittnach, Baltimore, Md.
William Smith, York, Pa.

On motion, the President was directed to deposit a ballot

in favor of the candidates, who were then declared elected, the gentlemen previously appointed having again acted as tellers.

The reports of committees being called for, the following were handed in, read by their titles, and laid upon the table for future action:

Report of the Executive Committee, with the report of the Permanent Secretary.

Report of the Committee on the Progress of Pharmacy.

Report of the Committee on the Drug Market.

Report of the Committee on Papers and Queries.

Report of the Committee on Adulterations and Sophistications.

Report of the Committee on Legislation.

Report of the Committee on Arrangements for the Meeting in 1876.

Report of the Committee on Formulæ for Elixirs.

Report of the Committee on Editorship of Report on the Progress of Pharmacy.

Report of the Committee on Photographic Album.

Report of one member of the Permanent Committee on the Pharmacopœia.

The Business Committee called up the following amendments to the By-laws, proposed at the last session of the Cleveland meeting:

1. Amend Article 6, Chapter VI, to make it read, *All local organizations of Pharmacists* shall be entitled, &c.

2. In order to have the Committee on Specimens appointed at the first meeting, the following change in the By-laws is proposed:

Remove Section 8, of Article 3, in Chapter VII, so as to follow Section 8 in Article 2 of same chapter.

Mr. Balluff.—What is the meaning of the word local? Is the New Jersey Pharmaceutical Association a local organization?

The Secretary.—Yes, sir.

Mr. Balluff.—It meets at different places.

The Secretary.—It has been decided by vote of the Association, that Alumni Associations of Colleges, and State Pharmaceutical Associations, are

to be considered as local organizations, because they belong in reality to one state or city, although their members may reside in different localities.

DR. SQUIBB.—I would like to know the object of the amendment. It might be well for the mover of the amendment to state what the object was.

THE SECRETARY.—We have had, for the last two or three years, some difficulty, and discussions arose in regard to the organizations entitled to representation in the American Pharmaceutical Association. Two years ago, at the meeting in St. Louis, a delegate from the Michigan University appeared and applied for admission as a delegate, on the ground that a branch of the University of Michigan was a College of Pharmacy. The Association ruled such was not the case, and did not admit the gentleman as delegate, although it admitted him as a member. Last year the Georgetown College of Pharmacy applied under similar circumstances, for representation; that delegate withdrew his credentials, and the question was left an open one. Then the Association referred the whole subject back to the Committee of Investigation, to whom the case had been referred, and that Committee reported that amendment as doing away with all future difficulty.

The idea of this amendment, as I understand it, is this, that any Association of Pharmacists is entitled to a delegation whether that Association be connected with, or have established a School of Pharmacy or not; but if one or more men should teach Pharmacy, the Association would not recognize them as a local Pharmaceutical Association. It must be an Association controlled by Pharmacists. I think that was the idea.

DR. SQUIBB.—If that be the idea, I do not see how this proposed amendment accomplishes it. A local organization of Pharmacists would be easily contrived. That is to say, any Association for Pharmaceutical purposes would be admitted to a delegation by this new By-law. These two instances we have had in which this dispute has arisen, might both come under that other wording, "All local Pharmaceutical organizations." They could be made local Pharmaceutical organizations if they be not so, and probably, in the strict technical meaning of the words, the Georgetown Pharmaceutical College and the Pharmaceutical Department of the University of Michigan are both local Pharmaceutical Associations. They are certainly in one sense of the word, and it seems to me it would admit the same cavil that the original By-law does.

THE SECRETARY.—I would call Dr. Squibb's attention to the wording of this proposed amendment; it does not read, "all local Pharmaceutical Associations," but "all local organizations of Pharmacists."

DR. SQUIBB.—That may cover the ground; will Mr. Maisch please read the By-law as it is.

THE SECRETARY.—Article 6 of Chapter VI reads now as follows:

"All Colleges of Pharmacy or local Pharmaceutical organizations shall be entitled to *five* delegates, as their representatives in the annual meetings, who, *if present*, become members of the Association on signing the Constitution

and paying the annual contribution for the current year, without paying the usual initiation fee."

The proposed amendment reads, "all local organizations of Pharmacists," leaving out the Colleges of Pharmacy, because they are regarded in this amended reading as being really local organizations of Pharmacists, if they are established and controlled by Pharmacists.

The amendment to Article 6, Chapter VI, of the By-laws was then adopted, without a dissenting vote.

MR. BULLOCK.—I was in hopes a little time would be allowed for members to think over that amendment. It is too late now, but while it covers the ground very widely indeed, it struck me it covered it too widely; there was no restriction placed upon it, to define what were those local organizations. Now, what is to prevent any local organization of druggists, perhaps who are not in connection with any College of Pharmacy, or any other organization in New York who are outside of the College there, forming themselves into an organization just to get a deputation into this organization. We have nothing to define what kind of organization shall be admitted to representation. It covers the ground, I admit, but in the most sweeping manner.

DR. SQUIBB.—I think Mr. Bullock will be satisfied as I feel, to let it go and try it. We can correct it when the time comes.

The second amendment, proposing to transfer Section 8, Article 3, Chapter VII, to follow Section 8, Article 2 of same chapter, was then read by the Secretary.

THE SECRETARY.—The reason that change appears to be necessary, is, that our rules require, that the second session shall close with the examination of the specimens on exhibition. If the Committee on Specimens is appointed only at the second session, that Committee is unable to show the Association any of the specimens; but if it is appointed at the first session, then it is supposed there will be sufficient time left for the Committee to examine and show the Association at its official visit to the exhibition the most important specimens on exhibition. It is actually no change, but simply the transfer of the section.

The amendment was adopted.

The Chairman of the Business Committee read the amendment to the Constitution, proposed last year, and which, under the rules, had to lay over to be acted upon at this meeting, as follows:

"*Resolved*, That the following article be appended to the Constitution, to wit:

"ARTICLE V. There shall be set apart from the funds of the Association such sum as may be annually determined, for the creation of a sinking fund for the uses and benefit of the Association, and such fund shall be invested by the Treasurer as directed in Article IV.

"*Resolved*, That Article V be called Article VI."

MR. BULLOCK.—I would like to ask, what is the intention of that second part; what expenses is it intended to meet? I was not at the last meeting of the Association, and I thought with a good many other members, I would like to have information on that point.

MR. BALLUFF.—I understood it was to set apart a compensation for the editor of the Report on the Progress of Pharmacy.

THE PRESIDENT.—Will Dr. Squibb give us the information?

DR. SQUIBB.—I was about to ask the Treasurer to give us the advantage of his knowledge and would like to hear what he has to say. If I remember, this was to be set aside for any future use the Association might see fit to make of it, but it was suggested that its interest be applied to the offering of prizes or some stimulation for papers or something of that kind. If I remember aright, it originated in the difficulty that we have been suffering from for two or three years past in getting answers to queries, and it was thought some stimulus might be necessary. I was not the mover of the proposition, but if I recollect aright, something to that effect was the object of it. If the time has come when our resources are more than abundant to meet our expenses, it would be very well to make such an amendment as this to the Constitution, and therefore, I should like to hear the Treasurer upon the subject of the advisability of making a constitutional provision for a sinking fund.

DR. TUFTS.—Perhaps after the Treasurer has made his report, the Association will be in a better condition to judge of this matter.

THE SECRETARY.—I move that it be laid on the table, until after the Treasurer has made his report.

The motion was agreed to, after which Professor Procter presented the report of the Committee on Credentials.

The undersigned Committee on Credentials report the following list of delegates to this meeting:

Massachusetts College of Pharmacy.—Prof. George F. H. Markoe, Joel S. Orne, Ashel Boyden, I. Bartlett Patten, B. Frank Stacey.

College of Pharmacy of the City of New York.—Paul Balluff, Bernard Reinold, Moses L. M. Peixotto, David Hayes, Frederick Hoffmann, Ph.D.

Philadelphia College of Pharmacy.—Prof. William Procter, Jr., Charles Bullock, Joseph P. Remington, S. Mason McCollin, Henry N. Rittenhouse.

Maryland College of Pharmacy.—Louis Dohme, John F. Hancock, N. Hynson Jennings, J. Henry Hancock, Ferdinand Hassencamp.

Louisville College of Pharmacy.—C. Lewis Diehl, Emil Scheffer, William G. Schmidt, B. Franklin Alford, John Colgan.

Chicago College of Pharmacy.—Albert E. Ebert, Ezekiel H. Sargent, George Buck, Thomas N. Jamieson, Theodore H. Patterson.

National College of Pharmacy, Washington, D. C.—Oscar Oldberg, John R. Major, Francis S. Gaither, William B. Entwisle, William S. Thompson.

Mississippi State Pharmaceutical Association.—John T. Buck.

Tennessee College of Pharmacy.—Benjamin Lillard, Phar.D.

Newark Pharmaceutical Association.—Charles W. Badger, Andrew M. Mills, M.D., Ernest Dreher, Ransford W. Vandervoort, Henry W. Stanford.

New Jersey Pharmaceutical Association.—Edward P. Nichols, M.D., Charles H. Dalrymple, Joseph De la Cour, William Rust, Randal Rickey.

Saginaw Valley Pharmaceutical Association.—Leander Simoneau, Samuel S. Garrigues, Ph.D., William Moll, Job F. Street.

Alumni Association of the Philadelphia College of Pharmacy.—Edward C. Jones, Herman A. Vogelbach, Henry K. Bowman, H. Edward Wendel, Richard V. Mattison.

Alumni Association of the Massachusetts College of Pharmacy.—Charles A. Tufts, Henry W. Lincoln, Thomas Doliber, Judson R. Cheney, Charles E. Tappen.

Alumni Association of the College of Pharmacy of the City of New York.—Hampden Osborne, Charles A. Robbins, Henry C. Porter, Thomas Starr, P. W. Bedford.

Alumni Association of the Maryland College of Pharmacy.—A. P. Sharp, Charles E. Dohme, A. A. Kleinschmidt, Louis Becker, John Baumgartner.

Literary and Scientific Society of the German Apothecaries of the City of New York.—Gustavus Pfingsten, Charles Eimer.

They also report the following names as delegates from the Kansas College of Pharmacy and of the Allegheny County Pharmaceutical Association without properly attested credentials, and submit them to the Association for its approval:

George Leis, Robert J. Brown, Joseph Harrop, from the Kansas College, and William H. Brill, Harrison S. Lutz, from the Allegheny County Pharmaceutical Association.

Respectfully submitted,

W. PROCTER, JR.,

GEORGE F. H. MARKOE.

The report was accepted, and the delegations from the

Kansas College of Pharmacy and the Allegheny County Pharmaceutical Association were, on motion, received.

The Secretary called the roll, when 72 members answered to their names. He also read an invitation from the Young Men's Christian Association to visit its rooms, and use its books and papers. On motion of Dr. Squibb, the invitation was accepted, and the Secretary directed to properly acknowledge the same.

Professor Procter read the following report of the Committee on the Editorship of the Report on the Progress of Pharmacy:

To the American Pharmaceutical Association:

The Committee appointed last year to consider the subject of the *Annual Report* on the Progress of Pharmacy, and present some plan whereby the objects of the Association may be better attained, report,

1st. That a report on the annual progress of pharmaceutical knowledge is very useful and desirable, and experience proves it to be best done by a single reporter.

2d. That a change in the manner of obtaining that report is advisable and necessary to insure its regularity.

3d. The extent, variety, and character of the report, if well executed, being too great and laborious to be gratuitously contributed by a member, it is advisable to create a new officer, to be called *the Reporter on the Progress of Pharmacy*, who shall receive a salary for his services.

4th. If the Association adopts these suggestions, then the following changes will be required in the Constitution and By-laws, viz.:

In the Constitution, Article III, *after* the word Treasurer, *insert* the words "and a Reporter on the Progress of Pharmacy;" and *omit* the word "and" *before* the word Treasurer.

Immediately after Chapter IV of the By-laws insert the following new chapter:

CHAPTER V.

OF THE REPORTER ON THE PROGRESS OF PHARMACY.

Article I. The Reporter on the Progress of Pharmacy shall be elected annually, and shall receive from the Treasurer an annual salary of $ for his services.

Article II. All journals and volumes received in exchange for the "Proceedings" by the Permanent Secretary, and such other journals as shall be deemed necessary, shall be sent to him by that officer for use in the compila-

tion of his "Report," for all of which he shall be held responsible until returned to the Permanent Secretary for preservation.

ARTICLE III. From these and other available sources he shall prepare a comprehensive report on the improvements and discoveries in pharmacy, chemistry, materia medica, and the collateral branches of knowledge; on the changes in condition of Pharmaceutical Institutions, together with such statistical, biographical, and obituary notices as will furnish an epitome of the progress and changes in the science and practice of pharmacy, and of its votaries at home and abroad.

ARTICLE IV. The report on the Progress of Pharmacy shall commence with July 1st of the preceding year, and end with June 30th of the year in which it is submitted, shall be written in a form fitted for the printer, and shall be presented complete at the annual meeting.

ARTICLE V. In case of the illness or other inability of the Reporter to carry on the work of the report, the Permanent Secretary and the Chairman of the Executive Committee shall be required to make the best arrangements they can command to continue the work to its completion.

"Chapter V" of the present By-laws becomes Chapter VI, in which the following changes are required, in consequence of the above changes, viz.:

CHAPTER VI, ARTICLE I. After the words "Executive Committee" in the second line, *omit* "a Committee on the Progress of Pharmacy."

ARTICLE V to be entirely omitted, and the articles following to be numbered to suit the change.

The Committee recommend that the blank in Chapter V, Article I, be filled by the sum of "$250."

They also report that after much inquiry and careful consideration, followed by a full consultation with Mr. Diehl, they propose the name of C. Lewis Diehl, of Louisville, Kentucky, as a suitable *Reporter* for the ensuing year.

Respectfully submitted,

WILLIAM PROCTER, JR.,
E. R. SQUIBB,
E. H. SARGENT,
Committee.

On inquiry being made whether the report could be acted on now, contemplating as it does a slight change of the Constitution, by the insertion of the words, "and a Reporter on the Progress of Pharmacy," in Article III, the Secretary read Article V of the Constitution.

DR. SQUIBB.—My belief is that a committee having been ordered and the change proposed at the last annual meeting, the Association is competent to act upon it at this.

DR. MENNINGER.—I move that the discussion on this subject and the consideration of it be postponed until to-morrow's meeting.

PROF. PROCTER.—It is absolutely necessary in view of the action of the Committee on Nominations to have the matter settled.

DR. MENNINGER.—I withdraw the motion.

THE SECRETARY.—The resolution adopted last year reads, "That a committee of three be appointed to select a reporter on the Progress of Pharmacy, who is to be appointed at the next annual meeting, and that this committee suggest such changes in the By-laws as may be necessary;" the word constitution has not been used, but it appears to be necessary to change the Constitution.

DR. SQUIBB.—It was contemplated that it would be necessary to change the Constitution, and this is simply a report of how it is necessary to change it to meet the wishes of the Association. I think the subject has been fairly understood, and if the Association sees fit to make these changes and take this action a motion to adopt the report will carry the whole changes.

MR. BULLOCK.—I hope we will be a little careful and conservative in our alterations of the Constitution, especially as in cases of this kind there is nothing to be gained by it. We can adopt practically everything which that Committee bring forth, and which I really approve of, and carry it into effect at the present time, leaving the alterations of the Constitution for the next meeting. I see nothing whatever to prevent putting in operation at once that report without hurrying through in this unfinished manner the alteration of the Constitution.

PROF. PROCTER.—I wish to make an explanation in order to set the Committee right. If these propositions are not adopted, the Nominating Committee will have to report to-morrow morning the names of five members of the Committee on Progress of Pharmacy. If they are adopted, there ceases to be such a committee. It is therefore necessary for this action.

MR. BULLOCK.—I do not see why we cannot adopt all the provisions of that report and allow the alteration of the Constitution and fundamental laws of the Society to lay over to the next meeting and adopt all the rest.

DR. SQUIBB.—I cannot see what the difference in principle would be of doing the thing separately and doing it constitutionally, as it is proposed by the report of the Committee. If it be the sense of the Association that this shall take place—if it be considered a wise change, a change that will do us good and will be of service to us, it does not appear to be very different whether we adopt it as a constitutional measure now, or by resolution, or by the proposed arrangement of Mr. Bullock. If it is to be adopted, let us adopt it in any way we please, but it is a shorter way to adopt it in the way the Committee report than to adopt it in the way Mr. Bullock proposes.

MR. BULLOCK.—Then it seems to me we will have to have a resolution suspending the law requiring alterations of the Constitution to lay over one year.

Prof. Procter.—It has laid over one year.

Mr. Bullock.—It does not appear to me that that is the case, because it is necessary for these alterations to go before the Association. It would be delegating a strange power to a committee now to make alterations which we are to adopt next year without hearing them read at this meeting.

Dr. Squibb.—It is not necessary to adopt them; the Association can reject them, and no change can be made by any committee. It must be a change by the action of the Association itself, and if the Association chooses to decline to adopt these recommendations then the report will fall, of course, and the subject can come up on resolution if it be so ordered; but, in my judgment, the principle involved has been carried out. A resolution was offered at the last session of this Association to meet certain wants; these wants necessitated a change in the Constitution in order to carry them out. A committee was appointed, in recognition of these wants, to bring forward here a plan by which that was to be put in operation. That committee reports a set of words in alteration of the Constitution, which words are necessary in order to carry out the design of the Association and not the design of the committee. The committee is only ordered to form a plan by which the Association can carry out its design. Now this alteration is presented to the Association one year afterwards, and there has been one year in which to deliberate as to whether it shall take place or not. After a year's deliberation, the necessary machinery to effect the change is proposed, and now, if the Association chose to defer them to another year, it will be two years from the time of the proposed change, and not one year as the Constitution provides. I cannot see any real objection. There is a technical one, that the words in which this plan is to be adopted, were not proposed a year ago. The design was proposed a year ago, and the words which carry out that design are proposed now after a year's deliberation.

Mr. Bullock.—I approve heartily of everything in that recommendation, and do not wish to interpose any objection whatever, only that we shall be careful and do things agreeable to our own rules. Dr. Squibb's explanation goes a great way to satisfy my mind that he is correct, and I have no objection to the proceeding.

Mr. Bedford.—I move the adoption of the report.

The report was then adopted.

The appointment of the Nominating Committee being ordered, the following gentlemen were designated by the various delegations as members of said Committee:

Massachusetts College of Pharmacy,	G. F. H. Markoe.
College of Pharmacy of the City of New York,	David Hays.
Philadelphia College of Pharmacy,	Charles Bullock.
Maryland College of Pharmacy,	Louis Dohme.

Louisville College of Pharmacy,	C. L. Diehl.
Chicago College of Pharmacy,	A. E. Ebert.
National College of Pharmacy, Washington, D. C.,	W. S. Thompson.
Mississippi State Pharmaceutical Association,	John T. Buck.
Tennessee College of Pharmacy,	Benj. Lillard.
Newark Pharmaceutical Association,	Chas. W. Badger.
New Jersey Pharmaceutical Association,	Randal Rickey.
Saginaw Valley Pharmaceutical Association,	S. S. Garrigues.
Alumni Association, Philadelphia College of Pharmacy,	H. A. Vogelbach.
" " New York College of Pharmacy,	H. C. Porter.
" " Maryland College of Pharmacy,	A. A. Kleinschmidt.
" " Massachusetts College of Pharmacy,	C. A. Tufts.
Literary and Scientific Society of the German Apothecaries, New York,	Charles Eimer.
Kansas College of Pharmacy,	George Leis.
Allegheny County Pharmaceutical Association,	H. S. Lutz.

The President appointed in addition to the foregoing, the following five members from the Association at large: Abraham Boyd, Utica, O.; William Heyser, Jr., Chambersburg, Pa.; A. S. Lee, Raleigh, N. C.; William Vincent, Williamsburg, N. Y.; and Charles M. Helman, Cincinnati, O.

The Secretary read the reports of the Executive Committee and of the Permanent Secretary, which were accepted.

The Executive Committee respectfully report that the Twentieth Volume of our Proceedings was issued in the latter part of the month of January; every attention which could conduce to the early issue of the volume was promptly given by our Permanent Secretary.

In accordance with our usual practice, all the applications for membership in our Association have been properly registered, with the names of their respective vouchers, and will be reported at the proper time for election.

The duties of our Treasurer, which are now so onerous, would be greatly lessened, did all who apply for membership send with their application the amount of the initiation fee, annual dues, and the cost of the certificate of membership; all who fail to receive their certificates will know the reason, if they have not complied with these provisions.

The names of the following six active members have been added to our roll of deceased members during the past year, and the Committee regret that so few details are supplied to them, from which to frame a fitting memorial of their standing as pharmacists and their worth as citizens.

William J. Watson, of Brooklyn, N. Y., was elected a member in 1860. He was educated in his profession by Professor Procter, and graduated by the Philadelphia College of Pharmacy, in 1858. He was regarded as a careful pharmacist and a worthy citizen, and was in his 40th year.

EDWARD PARRISH, Professor of Pharmacy in the Philadelphia College of Pharmacy, died at Fort Sill, Indian Territory, on the 19th day of September, in the 52d year of his age. Any eulogy of ours would be inadequate and unnecessary; his long connection with this Association, his activity in its various committees, upon which he so frequently served, and his presidency for a term, are all fresh to the minds of most of our members.

Widely known for his contributions to pharmaceutic literature, and as the author of the treatise on pharmacy bearing his name, he will long be remembered as one of those whose efforts were directed to the advancement of our profession; in private life and in his home he was esteemed for his many estimable qualities, and mourned for as a kind friend and most indulgent parent.

KLINE C. LINEAWEAVER, of Washington, D. C.; became a member of our Association in 1864.

WILLIAM E. P. BAYLISS, of Brooklyn, N. Y.; was elected a member in 1860, and bore an excellent reputation among his neighbors for competence in his business, and integrity in his private life.

TRISTRAM W. METCALF, of Brooklyn, N. Y.; was elected a member in 1857, and he was esteemed as a worthy and estimable man.

EDWARD W. SACKRIDER, of Cleveland, elected a member in 1859, and was one of its Vice-Presidents. He was an active and capable business man, and devoted to his profession, and of genial temperament. He visited the southern part of our country for relief from pulmonary disease, but without success; he died in April, 1872.

Three deaths have taken place among the honorary members of this Association, viz.:

ELIAS DURAND, of Philadelphia, in the 80th year of his age. A native of France, and in his early years served in the army of the Empire, under Napoleon the First. He came to this country, locating first in New York, then in Philadelphia, next in Baltimore, and finally settling permanently in Philadelphia, where he practiced pharmacy for many years. He was considered a most excellent botanist, and devoted much time to its study. He was, at one time, Vice-President of the Philadelphia College of Pharmacy, and his name appears in the earlier numbers of the "American Journal of Pharmacy," as a frequent contributor to its pages. He leaves one son.

DR. J. F. HERMANN LUDWIG, born at Greussen, Sondershausen, August 12th, 1819, and was educated to the profession of pharmacy. In 1844 he went to Jena to prosecute his studies, and in the following year he was made assistant to the eminent Professor Wackenroder; in 1847 Professor of Agricultural Chemistry; within the three following years he was made successively lecturer and director of the Pharmaceutical Institute. In this capacity he labored until sickness prostrated him and finally resulted in his death, on January 8th, 1873. He was elected an honorary member of this Association in 1871.

C. L. ARTHUR CASSELMANN, Ph.D., M. Phar., died in St. Petersburg, aged 44. He labored most earnestly to advance the status of Pharmacy in Russia, and was editor of the "Pharmaceutical Journal for Russia." In 1868 he was

elected an honorary member of our Association, and subsequently of several other American institutions. His death took place on November 12th, 1872.

REPORT OF THE PERMANENT SECRETARY.

To the Chairman of the Executive Committee:

At the Cleveland Meeting, the Secretary was directed to wait for the Report of the Committee on the Progress of Pharmacy, until the end of September, 1872, which resolution was at once communicated to the Chairman of that Committee, with the request to inform the Secretary whether the report might be certainly expected. Not receiving any answer, another request was sent through Mr. E. Scheffer, and an answer received through him, that business would prevent the Chairman from finishing the report for publication in September, or first half of October. This note did not reach the Secretary until October 5th, so that from two to three weeks of valuable time had been lost, and the Proceedings had to be printed without the usual report.

Another difficulty had in the meantime presented itself; Mr. Louis Dohme, the Chairman elect of the Committee on Progress of Pharmacy, had been placed in that position without his knowledge or consent; he was not present at the last meeting, suffering at the time from a painful affliction of the eye, which incapacitated him for such literary labor as is necessary for furnishing a correct report. On correspondence with the other members of the Committee, it was found that they were willing to accept a smaller or larger portion of the labor; but even the utmost which they could promise was insufficient to furnish a complete report. In his correspondence with other members of the Association whose fitness for the labor he was aware of, the Secretary found willing hearts enough, who, however, were unable to devote the requisite time to such labor. Finally, Professor C. Lewis Diehl, of Louisville, volunteered to prepare that important report, and thus prevent the Association from again doing without it, or receiving only a partial report. This act on the part of Professor Diehl is very commendable, and the Association is under such great obligations to him, that it appears proper to suggest that his voluntary act receive that recognition which is due to it. Of course the President and Executive Committee gladly availed themselves of this offer, and Mr. Diehl's name was substituted in the place of the Chairman elected by the Association.

The death of my honored friend and colleague, Professor Edward Parrish, who was Chairman of the Committee on the meeting of 1876, made that position vacant, and after due consultation and correspondence, the President decided that the next member of the committee, Mr. Samuel M. Colcord, of Boston, act as Chairman, and Mr. Charles L. Eberle, of Philadelphia, was added to the Committee as its fifth member.

With all the delays consequent upon these occurrences, and the intervening holidays, the Proceedings were distributed in the beginning of February, and their distribution would have been delayed another month if the Report on the Progress of Pharmacy had been received. Delays for such and similar reasons are always possible, and frequently have given the Secretary trouble

and much anxiety. After a great deal of consideration, the Secretary feels convinced that it is but justice to those who contribute papers at the meetings of the Association, that the publication of the same be not delayed until the appearance of the Proceedings. He would, therefore, suggest to the favorable consideration of the Association, to permit the publication of scientific papers and essays, prepared and read either in answer to Queries, or presented as volunteer reports; there are but two or three journals to consider in connection with this suggestion, and if permission be given to them to obtain for the purpose of publication, and with the consent of the Secretary and Editor, such papers as they may select, it appears to be but an act of justice to the authors. If such permission be granted, it should, however, be coupled with the restriction, that the *original papers* (and not printed copies of the same), be returned to the Secretary, whenever he may need them, and any journal not complying with his request, should afterwards be excluded from participating in this arrangement.

In this place the Secretary should notice an error in the Proceedings of last year, occurring on page 200, in an editorial note, which is as follows:

"The author does not state how he prevented the contamination of the precipitated sulphate of baryta, with bitartrate of potassa, which must be precipitated after adding acetic and muriatic acids, except *by heating the resulting liquid.*"

This note is altogether erroneous, it having at the time escaped the Editor's notice, that the acid liquid is again, before filtration, rendered alkaline to remove tartaric acid, while the sulphate of barium is freed from carbonate, by washing the mixture upon the filter with muriatic acid. The editorial note should accordingly be erased, and Mr. Grassly's paper on Seidlitz Powders stand as printed. The error has been so plain, that perhaps no member has been misled thereby.

Ten members had resigned up to the time of publishing the Proceedings, and twenty-nine members had to be placed upon the suspended list, not less than eight, and probably a larger number having removed from their former places of residence, and neglected to notify either Treasurer or Secretary of change of address.

The stock of Proceedings stored at the Philadelphia College of Pharmacy, is as follows:

1851, . . .	353 in papers covers.			
1852, . . .	114	" "		
1853, . . .	114	" "		
1854, . . .	—		out of print.	
1855, . . .	121	" "		
1856, . . .	—		out of print.	
1857, . . .	235	" "	24 bound.	
1858, . . .	68	" "	7 "	152 loose.
1859, . . .	—		45 "	
1860, . . .	—		219 "	
1861, . . .			none published.	

1862, . . .	—			293 bound.
1863, . . .	—			272 "
1864, . . .	189 in paper covers.			181 "
1865, . . .	155	"	"	84 "
1866, . . .	73	"	"	79 "
1867, . . .	152	"	"	98 "
1868, . . .	63	"	"	145 "
1869, . . .	108	"	"	168 "
1870, . . .	115	"	"	75 "
1871, . . .	89	"	"	71 "
1872, . . .	109	"	"	13 "

This stock has been reinsured in the German Fire Insurance Company of Philadelphia, for $2500, at a somewhat increased rate, making the annual premium $17.50.

Owing to protracted sickness of the Local Secretary, the Executive Committee thought it advisable that the Secretary should visit Richmond last spring. The cordial reception which this officer of the Association met with by the members of our profession residing there, indicated the lively interest felt by them, in the aims and objects of the Association. During this brief visit, the Dean of the Faculty of the Virginia Medical College, Professor J. B. McCaw, M.D., tendered their building to the free use of the Association, during the Twenty-first Annual Meeting, and although this offer was, for various reasons, subsequently not accepted, the interest evinced in our Association, by this voluntary act, calls for an expression of grateful acknowledgment on our part.

The expenses of the Secretary, incidental and in connection with the publication of the Proceedings, and not including the travelling expenses, have been during the past year, as follows;

Telegrams, ...	$3 36
Porterage and Freight, ...	79 65
Engraving of Woodcuts, ...	31 00
Maps and Bulletins from Chief Signal Office, . .	61 25
Filling up of Honorary Certificates, ...	6 00
Twine, Packing Boxes, &c., ...	13 80
Twelve United States Pharmacopœias, ...	14 97
Postage Stamps, ...	148 50
Ballot Box complete, ...	5 50
Circulars, Blanks, &c., ...	26 00
Fire Insurance, ...	17 50
Total, ...	$402 58

For Proceedings sold, the Secretary has collected the sum of $25.50.

In conclusion, the Secretary desires to express his obligations to the Pharmacists of Richmond, for their proffered aid, regarding the arrangements for this meeting, and also to Messrs. J. F. Hancock, P. W. Bedford, and Professor

J. F. Judge, for their successful labors, in perfecting the travelling arrangements to and from Richmond.

JOHN M. MAISCH,
Permanent Secretary.

The Secretary also read the following letter from Mr. Mercein.

TO THE PRESIDENT AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

GENTLEMEN: Having been a member of that unfortunate Committee on the Progress of Pharmacy, for 1872, which did *not* make a report, I deem it my duty to state to you my share towards endeavoring to complete that document. Mr. Thomas E. Jenkins, the Chairman of the Committee, allotted to me the compilation of all matters of interest in pharmacy, &c., to be found in the United States and Canadian journals and newspapers, pharmaceutical or otherwise. This duty was performed to the best of my ability, and Mr. Jenkins was notified of its completion at least one month before the Annual Meeting. I have never heard from him since, and the result of, to me, much valuable time wasted, in the shape of nearly one hundred closely written foolscap pages, is still in my hands, at the service of any one who may desire its use.

Very respectfully yours,
JAMES R. MERCEIN.

THE SECRETARY.—It appears to me that Mr. Mercein's report might be made useful to the Association if it were placed at the disposal of Prof. Diehl or of the Executive Committee.

DR. SQUIBB —I was thinking of that, and I thought the proper way would be for the Association to receive that report. Mr. Mercein is now straight before the Association. He shows he has done his part of the duty, and therefore no part of the onus of the failure of the report should belong to him. That letter of his is on file because it is addressed to the Association. I have no doubt that the future committee, or reporter on the Progress of Pharmacy, will avail himself of that report, without the necessity of a motion; there would be no motion that I can think of that would place the matter better than it now stands: namely, that the reporter of the Progress of Pharmacy for next year will avail himself of it.

THE SECRETARY.—It occurred to me, if Prof. Diehl has the time to spare, he might use that report for the present year.

PROF. DIEHL.—It seems to me it is better to publish that report separately as the report for 1872. It may require some arranging, and in conversation with Mr. Maisch I volunteered to arrange the report if it should be found necessary to do so, provided the report is written on one side. If I should have to copy the whole, I fear I will not find the opportunity to do it in time for this year's Proceedings.

Dr. Squibb.—The matter seems to be turning out just as it had gone through my mind, namely, that it may not be in a proper form for publication; that it is matter to be offered to the Chairman, who was to incorporate it into the report, therefore the matter therein might be received, and if the reporter on pharmacy for this year chooses to take that additional labor on himself, I for one would be much obliged to him for it, and have it published in the forthcoming Proceedings in addition to the report for this year. Perhaps almost all the matter in that report will be embraced in the forthcoming report. These matters are published in the journals, and the probabilities are, nearly all that matter is now before the public. If it is referred to a committee to use such of it as has not been published and publish it in addition to the present report, that would be a good way to dispose of it.

The Secretary.—Mr. Mercein does not offer it to the Association as a report. He simply states the fact that he had finished, more than a year ago, one hundred closely written pages. Mr. Mercein wrote to me last year that his report should never be printed as a volunteer paper, if it could not come in as the report of the Committee on the Progress of Pharmacy. He does not offer it now.

Dr. Squibb.—My idea was that the Association request him to turn it over to the reporter for this year or for next year, I do not care which; it will be valuable when it comes in.

Prof. Procter.—If I understand the statement of the Secretary, it was that there had been an arrangement between Mr. Jenkins and Mr. Mercein, in which he, Mr. Mercein, condensed the subjects or matters of importance from the journals of the United States and Canada, and perhaps the English journals, and that Dr. Jenkins was to condense all the foreign journals, the French and perhaps the German. If that is the case, and there is a regular report of the journals published in England and the United States and Canada, the paper of Mr. Mercein certainly is of some importance as an important part of the report which should have been handed in last year; and if he is willing to offer it to the Association now, as is suggested, and Mr. Diehl finds it is in proper condition for publication, I would suggest that the Association ask Mr. Diehl to receive it and have the Secretary publish it in the next Proceedings, in the name of Mr. Mercein, as a report, perhaps with some explanation of the way it came.

Mr. Hancock.—Is it not necessary to request by resolution that Mr. Mercein present this report to the Association? I move that Mr. Mercein be requested to present his report on the Progress of Pharmacy for 1871–72 to this Association.

The motion of Mr. Hancock was agreed to, and it was further resolved, that Mr. Mercein's report, if received, should be referred to the present acting Chairman of the Committee on the Progress of Pharmacy, to arrange it for publication, if this should be found necessary.

The Executive Committee presented the following applications for membership, the candidates having complied with the requirements of the By-laws:

Theodore Cole, New York.
Frank A. Davidson, Providence, R. I.
A. A Kleinschmidt, Baltimore.
William H Scott, Richmond.
Louis Wagner, Richmond.
Joseph S. Whall, Boston.
Robert B. Wood, Richmond.
J. Willits Worthington, Moorestown, N. J.

On motion, the President was directed to cast a ballot in favor of the proposed candidates, and the gentlemen were then declared duly elected.

The President now delivered his annual address, as follows:

To the American Pharmaceutical Association.

Gentlemen: Pursuant to a constitutional requirement, it has become customary that the retiring President address you, and review in general the affairs of the Association during the period which has elapsed since its last meeting, and also communicate any information regarding its present condition, with suggestions for its future usefulness.

It therefore becomes my pleasant duty at this our Twenty-first Annual Meeting to address you, and my first impulse is that of congratulation in having at last accomplished the so long-contemplated project of meeting in the southern portion of our country, and the satisfaction we feel in extending fraternal greeting to the members of the profession throughout this large section, hoping to inaugurate those influences which will prove a powerful stimulus for the promotion of the profession not only here but throughout the entire country.

This is the second time in the annals of our organization that we have chosen a place of meeting without a previous invitation.

Those who may have had a misgiving of our success at this venture will certainly have had the same dispelled ere this, by the hospitality and accommodations provided for those who are visitors in this historic capital of the "Old Dominion," and I may venture to express the conviction, that the present meeting will not be found wanting in pleasant associations and lasting reminiscences; also the hope that with the many valuable reports and papers from committees and individuals to whom these labors have been intrusted, it will not fall short of previous meetings in interest or value.

The Local Secretary, who was appointed at the Cleveland Meeting, removed from this city soon afterwards, and we were thus deprived of the usual aid from this officer, therefore the labor of this position fell upon your Permanent Secretary, who assumed the duties thereof, and according to instructions received at the last meeting, visited Richmond early during the season, and made all necessary arrangements, at great sacrifice of time to himself.

The Annual Proceedings of 1872 were issued about the middle of February,

presenting a very creditable exhibition of our work and progress. The annual delay in the issue of our publication is due to the time when the "copy" is given to the publishers, who are, just then, overcrowded with work, owing to the proximity of the holidays, and this will always occasion more or less delay as long as we hold our sessions at this season of the year. I fully concur in the recommendations in the report of our Secretary, that on account of this unavoidable delay in the publication of our Proceedings, the papers presented to and read at the meetings, be published in the several pharmacal journals of the country immediately after adjournment. This method of publication would no doubt be an additional inducement to investigators to bring their researches before this body, as they would not be required to await their publication five or six months as now, thereby detracting from the value of their work, and generally preventing their appearance in the journals of our profession. The publication of Essays and Reports previous to the appearance of the official Proceedings is customary with the British Pharmaceutical Conference, and we think this method does not detract from their merits, while it has the effect of making the Association more prominent and forcibly illustrating its great value to our profession.

The progress that the Association has made during the last twelve months is very encouraging. At our last meeting we added about seventy-five new names to our roll, which makes our present membership about 1000.

This statement shows the increase from nine members in 1851, and proves the increasing value of our work, yet when we take into consideration that there are from 15,000 to 20,000 pharmacists in this country who are eligible to membership, our percentage of representation is not as large as it should be. It may benefit us to institute a comparison with the British Pharmaceutical Conference, which was modelled somewhat after our own organization some ten years ago. It has but half the number of years in age yet more than double our number of members. This result was obtained by inaugurating a systematic effort four years ago to increase the then existing small membership. Would not such an effort on our part meet with a similar result? We are contemplating a great meeting in 1876. Would not the effort be worth a trial in view of such a meeting? It would aid us in raising the status of the profession, assist in obtaining equal and beneficial laws for the regulation of pharmacy in the different States, and thereby call into life pharmacal schools and associations, whereby the American pharmacist would soon in an educational aspect be on an equality with his European colaborer, whose advantages in this important particular have always been superior to ours.

The work of increasing our membership might be delegated to the Committee on Legislation, in concert with or under the direction of the Permanent Secretary, its present Chairman. This Committée should be permanent, and have a representative from each State in which we have members. Such an increase will add to our yearly revenues and enable us to more adequately compensate our salaried officers, and recompense others whose duties towards this Association requires much time and labor.

The question of creating a sinking fund was proposed and urged at the

Cleveland Meeting, and will come up during this session for our consideration and decision.

We suggest that the interest of this fund may be used each year for the purpose of creating suitable prizes for the best essays presented and read at our meetings, having either a practical or scientific bearing on pharmacy or the collateral sciences. This would produce a needed stimulus to those who at present cannot afford to expend the necessary time and money for investigations. This obstacle has been to some extent a cause of the comparatively small percentage of answers received to our annual queries.

The granting of prizes has been customary among scientific bodies in Europe, and the receiving of them much coveted by writers. Experience has shown its wisdom, and we hope the delay in offering prizes may be measured only by our ability.

During the past year death has as usual been busy among us, robbing us of some of our most worthy members. We have now reached an age as an Association when we must be prepared annually to bear the loss of some of those who were its founders as well as its main support during its days of trial, and by whose wise counsels the Association has achieved its prosperous condition. Foremost among these stands the name of our much-mourned member, Professor Edward Parrish, whose time and efforts were freely given to advance the interests of this Association, and whose words of wisdom were always listened to with respectful attention. In the death of Professor Parrish the profession at large has lost one of its ablest and most earnest champions, and this Association one of its most useful members. His unselfish and generous heart was always open to the youth of our profession, who have lost in his death a highly valued counsellor, teacher, and friend.

We have also to record the death of Dr. Arthur Casselmann, of St. Petersburg, Russia; and of Professor Dr. Hermann Ludwig, of Jena, Germany, both honorary members of this Association.

In common with the scientific world at large, we have met a serious loss in the demise of Professor Liebig. Although not connected with us as a member, we cannot forget that we as pharmacists had some claim upon him, as his taste for the science in which he became a leader was fostered during his apprenticeship to the apothecary business.

A movement has been inaugurated to erect in the city of Munich, Germany, a fitting monument to his memory, and we hope that American pharmacists will generally participate by contributions in aiding this worthy undertaking.

More recently, we are pained to learn of the death of Elias Durand, the eminent pharmacist and botanist, of Philadelphia, who honored this Association from its infancy, by his connection with it as an honorary member.

There may be others who should be alluded to in this connection of whom the Executive Committee will present proper notice.

THE REPORT ON THE PROGRESS OF PHARMACY.

A great disappointment has been generally felt and expressed that the member who personally accepted the duty of reporter, at our Nineteenth

Annual Meeting, failed to make a report, and this without any explanation for so doing, so that our Proceedings for last year was shorn of one of its most important and interesting features.

In making the appointment for the current year, the Nominating Committee selected as Chairman one who was not only fitted to perform the duties, but who would have done so most willingly, had his health permitted him to accept the appointment, which was made by the Nominating Committee without being aware of his ill health. In this event we have a strong illustration of the argument, against nominating officers and chairmen of important committees, who are not present at the meeting and cannot be consulted. Owing to the inability of Mr. Louis Dohme to perform the duties of chairman on the Progress of Pharmacy, and to prevent a second failure in a report from this Committee, another appointment was rendered necessary. The difficulty was happily relieved by our member Mr. C. Lewis Diehl volunteering to accept and perform this arduous labor. He was accordingly appointed by the President with the approval of the Executive Committee.

This self-sacrificing labor on the part of our fellow-member is highly commendable, and we may expect an unusually full and excellent report at this meeting.

The Committee appointed at our last meeting on the Editorship of the Report on the Progress of Pharmacy, have a report to submit for our consideration, which may solve the yearly problem of how to fill the Chairmanship of this Committee.

We hope the Association will fully appreciate the existing difficulty and adopt the recommendations of the Committee, who we learn have a conditional promise of the services of one, who is competent to fill the position of Permanent Editor of this important annual report.

The Committee on Adulterations and Sophistications has, by the indefatigable energy of its Chairman, a very full and able report to present, which will furnish many instances of fraud and deception prevalent in the market. Would it not be well, whenever possible, to publish the names of the guilty parties, or where this is not possible, to trace it to the city from whence it comes? This Committee should be aided in its work by every member of our profession, in communicating such facts regarding adulterations, as may come to his knowledge. If this was generally observed it would speedily eradicate the evil by this annual exposure.

It is very questionable whether this Committee can furnish a report on this subject each year, without repeating the list of long and well-known impurities and adulterations. Would it not be advisable for the Association to direct the Committee, when in want of material for their report, to take up for examination, such officinal preparations as are in common use, of which the price, through unfair competition, has become too far reduced, leading to substitution and an inferior quality, largely through the practice of relying upon wholesale manufacturers for these preparations. Such an examination might do good in pointing out unsuspected frauds, and would inspire a greater respect for our national codex.

The Committee on the Drug Market.—The Chairman of this Committee has not been negligent of his trust, and we may therefore expect valuable information on this subject.

The report of the Committee on Infringement of Stamp Tax, and that of the Committee on Liquor Dealers' License of Apothecaries, will be presented. The Chairman of each has been diligent, but have thus far accomplished no material change in either law.

The report of the Committee to consider the arrangements for meeting in 1876, which should have been presented at our last annual meeting, did not come to hand, owing to the sudden death of its Chairman, Professor Edward Parrish. Your President, by the advice of the Executive Committee, filled the vacancy thus caused, by adding Mr. Charles L. Eberle to the Committee, and appointing Mr. Samuel M. Colcord Chairman, who will present a report at this meeting. It is hoped that the Association will take up the report and decide upon the feasibility of inviting the International Pharmaceutical Congress to meet in this country in 1876. The next Congress is to meet in St. Petersburg, in 1874, and we should either be properly represented by sending a delegation with an invitation, or the proper officers should receive the necessary instruction in regard to extending the invitation officially. Should the Congress decline to hold its meeting in this country, we should at once extend a general invitation to the pharmacists of all nations to meet with this Association at its regular meeting in 1876. For this purpose a Local Committee in the city of Philadelphia, should be appointed, under whose superintendence the necessary arrangements for either the meeting of the Congress, or that of our regular meeting can be made. It is very important that we move early in this matter of preliminary organization, and appoint the requisite Committees for the work, to insure on that occasion a National pharmacal success.

The Committee on Papers and Queries will present the usual quota of subjects for acceptance and answer, and we hope that the work of this Committee will be duly appreciated by the members, and the necessary care be exercised in the selection of Queries, so that the accepted questions will be answered, as much of the usefulness of the Association depends on the investigations annually contributed to science through this source.

The report of the Committee on Formulas for Elixirs will present an important subject for our consideration and action. The Association should take upon itself the responsibility of adopting a series of formulas for this class of preparations, which would to some extent modify the present great annoyance to the dispensing pharmacist. We ought not to consider such matters, even in their trade aspect, as beneath our notice, as we are more or less dependent upon our business for the means of living, and by removing impediments we assist in raising the status of the profession, at the same time benefit ourselves in a pecuniary way. The advantages to result from such a series of formulas are manifold, and it is not necessary to discuss the desirability of this class of remedies, for the demand exists and must be supplied; if to be made at all, the dispensing apothecary should prepare them, and the formulas should be uniform throughout the country. At the present time we

are dependent largely upon wholesale manufacturing druggists, who advertise and compel the sale of their wares, always needlessly expensive and frequently of quite inferior quality, which is only possible through the lack of uniform preparations recognized by physicians in the same manner as are our tinctures and other officinal preparations.

In this connection we call your attention to a paper which will be read at this meeting, relating to the dispensing and sale of homœopathic remedies by pharmacists. We hope the subject will receive due consideration, as it would seem that we, as dispensers of medicines, should not stop to ask the question, to what system of practice does the remedy belong? but to faithfully prepare the same as requested and let time, which solves all problems, decide its utility. I think there would be no objection from the medical profession to our dealing in this class of remedies, as certainly it is not so reprehensible a feature as the sale of proprietary nostrums, and the homœopathic practitioners would no doubt support us in the undertaking, as they would have the advantage of much more skill and experience in the preparation of remedies than they now obtain. It is the custom throughout Germany, where this system of practice had its origin, to include the sale and dispensing of these remedies in the business of the authorized apothecary. The universal character thus acquired in the business of a dispensing pharmacist, as well as the legitimate pecuniary gain involved, should not be overlooked by us.

The report of the Committee on Unofficinal Formulas will not be presented, but some of the formulas will be reported by the Committee on Elixirs. We recommend that both these committees be discontinued, and that the labor be referred to the permanent Committee on the Pharmacopœia. This Committee has not, up to the present time, performed any work or made any report, nor even become organized as a committee. Should you decide to allot the suggested work to this Committee, it would be well to instruct it to organize at this meeting. There should be added to the Committee a member from each incorporated college or association, not now represented in the Committee, and a report be required at each meeting of this Association. This would bring the wants of the different sections of our country annually before us, and if formulas for preparations are necessary to be framed, they could be so ordered by the Association and adopted, which would give them some authoritative standing. It would also lead to a good result, in that the formula if desirable to be made an officinal preparation, could be presented by this Association to the present *Permanent National Committee on the United States Pharmacopœia*, and by them be so declared. Another advantage would be that at the next decennial revision we would be more united on important wants and changes.

During the interval since our last meeting the "United States Pharmacopœia" for 1870 has been issued by the final Committee of Revision. It is in the hands of the profession, and the members have each ere this set their critical fiat upon the work. It does not well become your President to discuss the merits or demerits of the production, but to urge fidelity to the processes and rules laid down for our government, so that uniformity may exist throughout the land. As many of the processes of the formulas have

been found faulty and incompatible to the production of good results, and as remedies of real medicinal merit have been omitted, we urge upon our Committee on the Revision of the Pharmacopœia to bring these needful changes before us, so that the same can be presented to the National Revisory Committee, with the request that such alterations be made. We have no right to find fault with the labor of others if we neglect to do our portion of the work, and the National Committee of Revision is so happily constituted that it will only be necessary to point out the changes required to insure their insertion in the next edition.

We feel much satisfaction in reviewing the progress our Association has made during these last twenty-one years, and in observing the advance made by the profession throughout the country.

Previous to the year 1851 there were but three teaching schools of pharmacy in existence, and only one, the Philadelphia College of Pharmacy, had sufficient life to maintain itself in its sphere of usefulness. At the present time there are no less than twelve teaching schools in active operation, located in the cities of Philadelphia, New York, Cincinnati, Baltimore, St. Louis, Boston, Chicago, Louisville, Washington, Nashville, San Francisco, and Ontario, Canada, with a total present attendance of over six hundred students. These schools are maintained by local pharmacal organizations, and independent of these we have pharmacal associations located in the States of Kansas, Maine, Michigan, Vermont, Mississippi, Tennessee, Pennsylvania, Illinois, and two in New Jersey. Much of this is certainly due to the stimulus disseminated by our organization, and although it is by no means desirable to multiply these schools to an unlimited extent, as this would diminish their usefulness by dividing their strength, yet the time is not far distant when it will seem necessary that each State shall possess such an educational organization, as the good effects of such institutions cannot be questioned in their relation to the public welfare, and, therefore, should be fostered by the several States where such schools are established. Although general appreciation of educational progress is a plant of slow growth, it becomes our duty to bear patiently with it, and work on quietly but firmly for the good of the cause, with that *esprit de corps* which will give impetus to some who may be sluggish in the work. Our effort to legally regulate the practice of pharmacy has also been crowned with success in different States, and no doubt the time will come when we shall enjoy the establishment of equal laws for the whole country. This is the result of associated effort, which separate individual exertion would have failed to attain; as in the fable, "The solid bundle of rods cannot be broken, while each separately is easily snapped."

In closing this review of our work during the year I wish to suggest a change which might prove, in the right hands, an improvement of value to each one of us. Owing to a provision of the By-laws, and from the force of long-established custom, it has become the habit for the retiring President to confine his address to a review of the stated work of our officers and committees. The Association has now reached such a prosperous condition, and its affairs are so well managed by competent and experienced persons, that this annual retrospect, and whatever recommendations may seem desirable to

present, could be better given by our Executive Committee. First, because our permanent officers are more familiar with our work and wants; secondly, because our Executive Committee should control and plan our business matters, bringing before us whatever may need our action or decision. By relieving the President of the duty mentioned, in the performance of which he must largely depend on others, the annual address could be devoted to a presentation of general scientific facts and events of the year, or a discussion of one or more scientific questions, which would prove of value to us without rendering the address too long for the occasion.

Allow me, gentlemen, in retiring from the position in which your kindness placed me, to return my thanks for the honor you conferred, and for the kind forbearance manifested with my inexperience as a presiding officer. I assure you it is a pleasant close of my official duties to congratulate you upon the harmony and friendliness of all associated in our meetings, and not less in the future possibilities of our united membership. May the ties of brotherly esteem be strengthened by our intercourse, and the bounds of this Association be extended until it shall include all who worthily bear the title of Pharmacist in our free and favored land.

ALBERT E. EBERT.

CHICAGO, September, 1873.

On motion of the Business Committee, it was resolved that the Chair appoint a committee of three to take into consideration the recommendations contained in the President's address, and in the report of the Permanent Secretary, and to report at a future session.

The President appointed the following—

Committee on Specimens.—A. W. Miller, M.D., Philadelphia, Chairman; M. L. M. Peixotto, New York; Joseph L. Lemberger, Lebanon, Pa.; G. J. Luhn, Charleston, S. C., and David Hayes, New York.

Committee on the President's Address and Secretary's Report.—Charles Bullock, Philadelphia; L. V. Heydenreich, New York; E. P. Nichols, M.D., Newark, New Jersey.

THE SECRETARY.—There is one matter I omitted to bring forward which ought to have come up before. The Secretary has received from the Department of the Interior, as a present to the American Pharmaceutical Association, a volume entitled, "Report of the Columbia Hospital for Women and Lying-in Hospital;" also two volumes of "Medical and Surgical History of the War of the Rebellion." The Secretary has acknowledged the receipt of the two works, and intends to place them on exhibition down stairs.

DR. MENNINGER.—I move that the thanks of the Association be tendered

to the departments forwarding these works, and be published in the Proceedings.

DR. SQUIBB.—As the Secretary has acknowledged them, this publication of our thanks will be perfectly proper.

The motion was adopted, and the Association afterwards adjourned to meet to-morrow morning at 9 o'clock.

Second Session.—Wednesday Morning, September 17*th.*

The meeting was called to order by President Ebert. The minutes of the first session were read by the Secretary and approved.

Mr. Peixotto desired to be, and was, on motion, excused from serving on the Committee on Specimens. Mr. William H. Scott was appointed in his place.

A letter was read from Mr. W. G. R. Frayser, requesting the Association to sit for a photographic group picture.

DR. SQUIBB.—I move that the letter be accepted, and the thanks of the Association be returned by the Permanent Secretary, with a statement, that for want of time, the offer be respectfully and kindly declined. I believe our experience in past years shows in relation to this matter a good deal of waste time, and there are but few good pictures that seem to give satisfaction. I think the interest of the Association would lead us to decline this invitation, although we accept its kindness.

The motion was agreed to.

Professor Markoe from the Nominating Committee read the following report:

The Committee appointed to nominate officers for the ensuing year have attended to their duty, and report as follows:

For President.

JOHN F. HANCOCK, ... Baltimore.

For Vice-Presidents.

WILLIAM SAUNDERS, ... London, Ontario.
JOHN T. BUCK, ... Jackson, Miss.
PAUL BALLUFF, ... New York.

For Treasurer.

Charles A. Tufts, ...	Dover, N. H.

For Permanent Secretary.

John M. Maisch, ...	Philadelphia, Pa.

For Reporter of the Progress of Pharmacy.

C. Lewis Diehl, ...	Louisville, Ky.

Executive Committee.

Thomas S. Wiegand, Chairman, ...	Philadelphia.
George Leis, ...	Lawrence, Kansas.
Charles L. Eberle, ...	Philadelphia.
Henry J. Menninger, ...	Raleigh, N. C.
John M. Maisch, Permanent Secretary, *ex officio*, .	Philadelphia.

Committee on Drug Market.

P. W. Bedford, Chairman, ...	New York.
William H. Brown, ...	Baltimore, Md.
William P. Keffer,*	New Orleans, La.
William H. Brill, ...	Pittsburg, Pa.
William S. Merrell, ...	Cincinnati, O.

Committee on Papers and Queries.

Joseph P. Remington, Chairman, ...	Philadelphia.
Louis Dohme, ...	Baltimore.
Benjamin Lillard,.	Nashville, Tenn.

Business Committee.

Edward P. Nichols, ...	Newark, N. J.
Joel S. Orne, ...	Cambridgeport, Mass.
John F. Judge, ...	Cincinnati, Ohio.

Charles A. Tufts,
Chairman.
George F. H. Markoe,
Secretary.

The report was, on motion, accepted. Dr. Squibb moved that the President be directed to deposit an affirmative ballot for the nominees of the Committee. The motion was carried unanimously, and Messrs. Boyd and Hassencamp, having been appointed tellers, reported the election of the nominees.

On motion of Mr. Peixotto, it was resolved that a committee be appointed to conduct the President elect to the

* Dr. Keffer has since died.—Editor.

chair. Professors Procter and Stabler were appointed this committee, and afterwards reported that the President was not in the building. The First Vice-President elect was then invited to preside, and was conducted to the Chair by the committee.

PROFESSOR PROCTER.—Gentlemen of the American Pharmaceutical Association, I have the honor to introduce to you, Mr. Wm. Saunders, of Ontario, Canada, your First Vice-President.

MR. SAUNDERS.—Gentlemen, I thank you kindly for this expression of your feeling towards me. I feel that it is not a personal compliment merely, but one to my country, and intended as an honor to the college I represent in Canada. It is quite unexpected to me, and I can only thank you for your kind feeling.

Dr. Tufts read the Annual Report of the Treasurer, as follows:

TO THE OFFICERS AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

In accordance with the requirements of the Constitution, I herewith present a report of the business of this office for the past year. All the bills of which I have any knowledge have been paid, and there is a balance in the treasury of $1029.47. It would give me pleasure to report a larger amount with which we could commence the business of another year, and this would have been the case had all our members paid promptly. While many of them pay as soon as they receive the bills, others postpone it, perhaps for a more convenient season, others wait for a second bill, and there is a class who do not pay until there is danger they may be dropped from our list, when the Treasurer receives their dues or a part of them. That officer, however, until restrained by the Association in his postage bill, will continue to present his missives to stir up the minds of those who are delinquent, by way of remembrance. The bills were not sent out this year until July; it might be well to send them at an earlier date, and the Treasurer will endeavor to do so another year.

A large number have notified the Treasurer of a wish to resign their membership, and we shall have a longer list to drop from the books of the Association than in previous years. Our dues were once two dollars per year, were then advanced to three dollars, and in 1871, to five dollars per year. It is not expedient for the dues to be larger than is necessary to meet our liabilities; perhaps we can do so with a less sum than five dollars per year. I do not recommend a reduction of the dues at present, but whenever it can be done without detriment to the Association, it will be the duty of the Treasurer to so recommend. The Association has accomplished much good for our profession, and it has much, very much more to do; we must therefore make our dues within the means of all who are qualified to become members.

There is still a list from whom no answers have been received about relinquishing life-membership. All the members on this list have been repeatedly

requested to decide this matter, and it will be a relief to the Treasurer, when the status of all these gentlemen has been finally determined.

Unless directed otherwise by the Association, the Proceedings will be withheld from all who are in arrears. If any member has not received the Proceedings, a careful search for his last year's receipt may enable him to obtain more light in regard to it.

Nearly each week letters are returned to the Treasurer from the post-office. Members change their residence without notifying the Secretary or Treasurer, and this entails much expense to the Association, as well as labor for its officers. We should deem it a favor, if the members would notify us of all changes, even of those in the streets and numbers of their cities or towns.

As there are so many places in our country the same as the Treasurer's, (twenty-five), he would thank the members to write the name of his State, "New Hampshire," in full; if letters then miscarry, it will be the fault of the post-office department.

Several instances have occurred where money has been lost in transit to the Treasurer. The members will please use postal orders if possible; drafts are not as well, unless payable in the large cities, otherwise there is a loss in collecting them.

When a pharmacist becomes a member of the Association, he promises, if he at any time obtains a certificate, he will return it when he ceases to become a member. This promise is in some cases entirely overlooked. The pharmacist who resigns, when he notifies the Treasurer, should send back his certificate with his request. If members are dropped for non-payment of dues, it is the duty of the Treasurer to request such members to return their certificates, and if this is not done, he must report their names to the Executive Committee. This duty will hereafter be strictly performed.

As he is actively engaged in business, your Treasurer cannot always answer letters as promptly as he could wish; he has endeavored to answer every letter sent him, and according to the date of its reception. Members will please be as lenient as possible with him, as letters shall all be answered in due time.

Thanking the members for the pleasant intercourse of the past year, and also those gentlemen who, in the large cities, have bestowed such valuable assistance, your Treasurer respectfully closes his eighth report.

Statement of the Receipts and Disbursements of the American Pharmaceutical Association, for the year ending September 16*th*, 1873.

RECEIPTS.

1872.		
Sept. 3d.	To balance on hand as per last report, ...	$733 21
1873.		
Sept. 13th.	To amount received for contributions, ...	3134 00
" "	" " " from sale of Certificates, . . .	210 00
" "	" " " " " Proceedings, . . .	68 70
		$4145 91

DISBURSEMENTS.

1872.			
Sept. 24th.	No. 1.	James H. Slade, Phonographic Report, . .	$186 00
Dec. 14th.	" 2.	John M. Maisch, Expenses, ...	113 66
" "	" 3.	" " "	51 50
" 24th.	" 4.	Charles A. Tufts, Expenses, ...	83 75
1873.			
Jan. 30th.	" 5.	Henry W. Lincoln, Expenses, ...	37 19
Feb. 10th.	" 6.	John M. Maisch, Expenses, ...	185 27
" 27th.	" 7.	Thomas S. Wiegand, Chairman Ex. Com., .	400 00
March 15th.	" 8.	John M. Maisch, Expenses, ...	30 60
July 22d.	" 9.	Thomas S. Wiegand, Chairman Ex. Com., .	200 00
Aug. 5th.	" 10.	" " " " .	300 00
" 29th.	" 11.	" " " " .	398 07
" "	" 12.	American Bank Note Company, Certificates, .	48 75
Sept. 1st.	" 13.	John M. Maisch, Expenses, ...	500 00
" "	" 14.	Charles A. Tufts, Expenses, ...	300 00
" "	" 15.	John M. Maisch, Expenses, ...	86 10
" 6th.	" 16.	Ig. Kohler, Expenses, ...	64 00
" 9th.	" 17.	Charles A. Tufts, Expenses, ...	47 57
" "	" 18.	" " Postage, ...	66 48
" "	" 19.	John M. Maisch, Insurance, ...	17 50
			$3116 44
" 12th.		By balance cash on hand to date, ...	1029 47
			$4145 91

E.E. All of which is respectfully submitted.

CHARLES A. TUFTS,
Treasurer.

On motion of Dr. Squibb, the report was accepted and referred to an Auditing Committee to be appointed by the President.

The following letter was read by the Secretary:

September 12th, 1873.

TO THE AMERICAN PHARMACEUTICAL ASSOCIATION.

GENTLEMEN: To further original investigation and to inaugurate a system of prizes by this Association, to those who, by study and application, shall add to our knowledge of medicinal substances, I have the pleasure to present to this Association the inclosed sum, five hundred dollars, to be used in the following manner: the money to be properly invested by order of the Executive Committee, and the annual interest derived therefrom, to be appropriated for conferring a suitable prize for the best essay, or written contribution, contain-

ing an original investigation of a medicinal substance, determining new properties, or containing other meritorious contributions to knowledge, or for improved methods, of determined merit, for the preparation of chemical or pharmacal products. The prize to be awarded by a suitable committee, within six months after the annual meeting at which the essays are presented for competition; provided, that in case no one of the essays offered is of sufficient merit to justify the award, in the judgment of the committee, all may be rejected, and the sum added to that of the fund.

Respectfully,
ALBERT E. EBERT.

DR. SQUIBB.—I do not like to be making all the motions, neither do I like to lose time, and I move that this offer be accepted in the kind spirit in which it is made to us as an Association, that it be heartily accepted, and the object of the donor be carried out by a committee to be appointed by the Chair, say a committee of three, to be called the Prize Committee. If this proposition is carried duly into effect at the next succeeding Annual Meeting, this Prize Committee may be made a constitutional standing committee; but for the present, I think it may be a temporary committee, to be passed over until next year. I therefore move that this offer of our late President, Mr. Ebert, be accepted, with the thanks of the Association, and the Chair appoint a Prize Committee of three, to carry out the objects of the donor.

The motion was agreed to.

The President elect being now in the room, the committee previously appointed conducted him to the Chair.

MR. SAUNDERS.—I have much pleasure in introducing to you, your President elect, John F. Hancock of Baltimore.

THE PRESIDENT.—Gentlemen of the Association: This is truly an unexpected honor, and I fear that the Association may regret its choice, but I shall not attempt to discuss that question. The act is yours, not mine, and I bow in obedience to your will. I thank you, gentlemen, warmly—sincerely thank you for this unexpected honor, and shall endeavor, to the best of my feeble abilities, to discharge faithfully and impartially the duties devolving upon me as your presiding officer. But, gentlemen, I must request a favor at your hands in this connection; I desire your assistance, and more than all, your forbearance. By concert of action, our counsels must be productive of much good, and I am sure that it is the determination of this meeting here assembled in the metropolis of the Old Dominion, to maintain and perpetuate the good name of our Association.

Fellow-members, the prospective usefulness of the American Pharmaceutical Association cannot be overestimated. We are quite conscious of the good already accomplished, but our destiny has not ended. Much remains to be done, and we trust that the day is not far distant when the good seeds sown by this Association, shall germinate in every part of the American con-

tinent, and that the withering blasts of decay shall not intrude upon a single germ, but that each shall grow and ripen into the brightest harvests of pharmaceutical usefulness; and God grant that the power for usefulness of our Association, shall extend its interest north, south, east, and west, until every honorable pharmacist in the land shall join this happy pharmaceutical family, where family jars are unknown, and where each member is bound by the strongest ties of brotherly affection.

Gentlemen, while thanking you for the unmerited honor which you have this hour conferred upon me, may I, in the name of the Association, extend our hearty thanks to the members of our profession in this beautiful city of the Seven Hills, and to the Mayor of the city, who so pleasantly and appropriately extended the hospitalities of the city to ourselves and those sojourning with us, in which he included our sugar-coated pills, elixirs, and precipitates, all officinal.

I have had the pleasure of attending many meetings of the Association, but never have I witnessed such cordial reception as has been extended to us in this city, and when we take up our line of march from this place, I am sure it will be with many regrets, mingled with many pleasant remembrances of our friends in the sunny South, with whom it has been our good fortune to associate in these few hours of our presence here; and it is our most earnest wish, brother pharmacists of Richmond, that we shall soon receive the good tidings of the organization of a pharmaceutical society or college of pharmacy in this city of the Old Dominion.

Gentlemen, I thank you for your kind attention, and I promise you my most earnest devotion to the obligations which I assume in taking the chair as your presiding officer.

The following Committee was appointed by the President to audit the Treasurer's accounts: N. Hynson Jennings, Baltimore; Benjamin F. Stacey, Charlestown, Mass.; and T. Roberts Baker, Richmond, Va.

Dr. Menninger, from the Executive Committee, submitted the applications for membership of the following gentlemen:

James L. Avis, Harrisonburg, Va.
Isaac R. Beam, Baltimore.
John Edwin Dove, Richmond.
F. Emil Fischer, Richmond.
Samuel Gerhard, Philadelphia.
Eugene Hartnett, New York.
James S. Talbot, Boston.

Messrs. Hassencamp and E. C. Jones were appointed tellers, and reported the unanimous election of the candidates.

Mr. Peixotto read the report of the Committee on Adulterations and Sophistications, which was accepted and referred for publication.

MR. PEIXOTTO.—Mr. Rice regretted very much not being able to attend this meeting, and requested me to state, that any work the Association required of him, he would be very glad to attend to.

Professor Diehl read the report of the Committee on the Progress of Pharmacy, which was, on motion, accepted and referred for publication.

DR. SQUIBB.—I feel that we ought not to take from a member the time occupied in making such a report as this, without some acknowledgment. In an emergency, such as occurred in the last year (we are all familiar with the fact that Mr. Dohme's eyes were in such a condition that he could not undertake the labor) at a late hour, namely, not earlier than the first of January, the whole work fell upon our reporter; it would be unfair for the Association to accept this report without some kind of acknowledgment to the gentleman who has come forward to fill the gap which the year before failed to be filled entirely, through a similar accident, but not one so susceptible of explanation. I therefore move that the sum which has been fixed upon by the Committee as the remuneration for succeeding years be given to the reporter for this year. I also take this occasion, in speaking upon this point, to bring up that question of sum again. It strikes me that the recommendation fixed upon by the Committee is inadequate to the labor involved in this report—entirely inadequate. We endeavor, and we need to endeavor, to improve this report, and therefore I wish to bring up this matter either now or at some other time, and to move to strike out the sum from the recommendation contained in the report. I have the approval of another member of the Committee, and I intend to move to strike out the sum and leave it open, to be fixed when we shall have the report next year. The sum is inadequate, and I think the Association will adjudge so.

The motion to pay the sum of $250 for the report of the Progress of Pharmacy was adopted.

DR. SQUIBB.—I now move that the sum inserted in the report of the Committee on the Editorship of the Progress of Pharmacy be vacated, and the place be allowed to stand blank, to be hereafter filled.

A MEMBER.—Does not that embrace an amendment of the By-laws?

DR. SQUIBB.—That was simply a recommendation of the Committee, and does not effect a change in the By-laws. The Committee, at the end of their report, if the gentleman will remember, recommended that Prof. Diehl be nominated for the reporter, and that the sum be fixed at $250, but in the By-laws that sum remains blank.

PROF. STABLER.—I propose to add to the resolution, "to be acted upon at a future meeting." I think some reason should be stated why the place is left blank.

DR. SQUIBB.—We all acknowledge we cannot compensate the reporter for

this work; that no man could undertake to make that report with the fidelity with which it has been presented to us in past years (I do not allude now to the present reporter); that one thousand dollars per annum would not adequately pay for the time and labor given to this report. With all the offices we have, it is impossible to pay, or try to pay, adequately for the services. We try to compliment; but that sum is not consistent with the amount of labor to be complimented for. Therefore, by allowing it to stand blank, we, year after year, offer a sum of money which may be in accordance with our means to offer, and in accordance with the Treasurer's report, or may be in accordance with the value of the report as it comes to us. It is left open to be dealt with at the time when the subject comes up.

MR. BULLOCK.—I think it will be well to divide that question, or rather, to omit from Dr. Squibb's amendment that the subject be left for future action. The subject is before us and the Association are bound at present to fix that sum, as hereafter it may be a matter of necessity to act upon it at an early day. The report upon the Progress of Pharmacy has been a voluntary one. The Nominating Committee have brought forward the name of a reporter for the next year who is to be a paid reporter, and the moment he becomes a paid officer of the Association, it becomes important for him to know whether the compensation shall be sufficient for him to do the work which the Association place upon him. It may be he thinks not, and he will resign, and the Nominating Committee may have to bring forward another name, and therefore I think it is incumbent upon us to settle the question as early as we can.

DR. SQUIBB.—The same thing has occurred to my mind in regard to it; but if we decide $250 is not sufficient for the work done, we never can give less than that hereafter; the award must be more than that. And if we can afford $300 or $400, we can vote it in proportion to our means. I venture to say that we have had these services done voluntarily for so long, if we as an Association show a little liberality, we may afford to leave the sum open. I think all of us will agree and will understand each other's motives and allow the amount to be left open if it is generally understood that it is not left open for the adjudging of a smaller but of a larger sum in proportion to our means of awarding it. In justice to the present reporter, he admits that he is willing to do it for nothing at any time, and would have done it for nothing this year. If we have a set of reporters who have served us for nothing and are still willing to, we ought to be willing to meet them liberally, and I think Mr. Bullock might consent on this ground that it is not to be made smaller, but larger, if we can afford it.

MR. THOMPSON.—It occurred to me Dr. Squibb's idea would be better carried out by leaving it as it is. It does not prevent us from making it larger if we can afford it. If we leave it at this sum, it will be $250 at any rate, and we could add to it if we could afford. We have awarded the $250 for the report of this year, and the matter as it stands would fix $250 for the next year. I would make a motion to fill in the blank for next year with $250; *that* is the recommendation of the committee in connection with their nomination.

Now if we devote this $250 to the work done last year by the present incumbent, which was carried by the Association, in order to effect the gentleman's object for next year, a motion must be made to fill the blank for the forthcoming year with $250.

A MEMBER.—Can the resolution be adopted without filling the blank?

DR. SQUIBB.—There is a blank in the By-laws in reference to the salary of the reporter. I think it will give more satisfaction if members agree to leave that unfilled next year. Under the new arrangement, when the reporter presents his report, we shall all be convinced that such a report is not adequately paid for by the sum of $250. Then let us adjudge as large a sum as the Association can afford without crippling itself, and so on year after year. If a time should come in future when a report comes that is of very little account, we can reduce it. I think the committee in inserting this sum, based it upon consultation with the Treasurer, and the ability of the Treasurer to meet it. It is not with any intention of depreciating the work. They know most of them what the work is. I think it will be more satisfactory to leave it blank and let the meetings decide.

THE SECRETARY.—The amount is adopted with the report.

DR. SQUIBB.—The recommendations were adopted with the report.

THE PRESIDENT.—Would it not be proper to reconsider as much of the resolution as refers to the amount?

DR. SQUIBB.—The effect of my original motion was to do it. It was to reconsider it, but not in that way. It was merely to change it. The effect was, to confine the recommendation of that report to the past year, to the work presented at present, and then to leave the blank to be hereafter filled. If it would make the proceedings appear more direct and straight on the minutes, it might be done by reconsidering that recommendation of the report. If Mr. Maisch desires that, I am willing to make that motion, to have his minutes read as they ought to read.

THE SECRETARY.—The report was adopted. It contained the recommendation that the blank be filled by the sum of $250; consequently the blank is filled.

THE PRESIDENT.—Then a reconsideration of so much as referred to this sum is necessary, and then the report stands for the sum to be filled in.

MR. THOMPSON.—This office was created yesterday by the report of this committee. Amendments to the Constitution and By-laws creating the office and defining the duties of the office, were adopted, with a blank for the salary, and the committee recommended that the blank be filled with $250. The entire report of that committee was adopted. Now the By-laws stand matured and the blank space filled with $250, which is just as much a part of the amendment as any other part of the amendment.

PROF. PROCTER.—The motion to adopt covered that ground.

DR. SQUIBB.—So it did, and the position the gentleman takes is well taken so far as regards the mere technicalities of its standing on the minutes, and

that perhaps ought to be modified. If then a motion to reconsider can be carried, then we can fill the blank. We can then order the payment of $250 for the past year, and allow the blank to remain unfilled. I suppose that would meet the gentleman's object, and that would clearly answer the purpose. I therefore withdraw my motion. Now, if we make a motion to reconsider so much of the report of the Committee on the Reporter on the Progress of Pharmacy as relates to the sum to be awarded, we shall meet the object.

MR. BULLOCK.—I think we are getting two things mixed with each other. The sum of $250 has been awarded for his compensation for the work now accomplished or about to be accomplished.

DR. SQUIBB.—We want to leave that vacant, so we can fill it in another year. That is the object of my motion to reconsider so much of that report as relates to the sum for filling the blank.

THE PRESIDENT.—The recommendation of the committee will then be adopted with the exception of the sum. That will be left for the action of the Association afterwards.

THE SECRETARY.—The only way we can get over this is to give notice of a change in the By-laws. Mr. Thompson is perfectly correct. This is a By-law now. "A reporter shall be elected annually, who shall receive $ from the treasury," and the committee recommended that the blank be filled with the sum of $250. This was adopted.

DR. SQUIBB.—"For this year" proves to have been left out of the report; those words being supplied would make that report complete.

THE SECRETARY.—Will Dr. Squibb give notice of an amendment to the By-laws?

DR. SQUIBB.—I would make that motion for an amendment to the By-laws in this respect to come up at a future session.

THE SECRETARY.—There is no question necessary, but simply a notice that a motion will be made at some future session in reference to the change in the By-laws in regard to this. The only object is, that the Association shall have previous notice of such a contemplated change.

The report of the Committee on Unofficinal Formulas being called for, Mr. Ebert stated that Mr. Milhau had informed him, that sickness in his family had prevented him from making a report.

A letter from C. R. Rees & Co., asking the privilege of taking a group picture of the Association, was read by the Secretary. On motion of Mr. Peixotto, the letter was directed to be placed on file, but the offer was respectfully declined for want of time.

Professor Diehl read the report of the committee appointed to suggest arrangements to be made for the meeting in 1876.

September, 1873.

TO THE AMERICAN PHARMACEUTICAL ASSOCIATION:

The committee to whom was referred the subject of proposing a plan of inviting, receiving, and entertaining the Pharmaceutical Congress, designed to meet in Philadelphia, in 1876, and in case of its declining the invitation, to invite individual pharmacists, and distinguished men of all nations connected with our profession, to meet with this Association, in Philadelphia, A.D. 1876, the Centennial Anniversary of our Republic, would respectfully report:

That any committee appointed by this Association, should act with and be in perfect harmony with the Philadelphia College of Pharmacy; that while this Association may act as a separate and independent body, all its acts should be in sympathy with the designs and doings of that College, that nothing may occur to conflict with the plans of either.

That the American Pharmaceutical Association being the only national pharmaceutical institution, it is eminently proper for the invitation to come from that body.

That this Association meet at Philadelphia, in the month of September, 1876, and continue the sessions at least one week.

That this Association invite all Colleges of Pharmacy, Pharmaceutical Societies, and Alumni Societies, to attend, with full delegations, and establish headquarters at some convenient place in the city.

That the various delegations be requested to have one or more members to represent them during one week before and one week after the meeting.

That every member of a society represented should wear upon the lapel of his coat or vest, during his stay in Philadelphia, some distinguishing mark or badge, as a small rosette, pin, or other device, as an intimation that he may be approached and made useful to strangers.

That all members of the Association be furnished with a similar badge of uniform, but not conspicuous, design, for the same purpose.

That the place of meeting of the Association be established as headquarters, with competent persons to give information to strangers at all times.

That a registration shall be kept of the names of all strangers, and where domiciled.

That each stranger, when registered, shall have presented to him a convenient pocket-map of Philadelphia, together with information relating to hotels, railroads, steamboats, and places of interest in and around Philadelphia.

That it is suggested to each delegation to prepare a similar pocket-manual of information, relating to their cities and localities, with reference to travelling excursions, places of interest, distances, fares, hotels, &c., either for free distribution or sale. That, if thought advisable, these maps, with information, to be used as guide-books, in pocket form, can be produced by publishers, a

certain number being guaranteed to be taken by the different delegations, to be sold or given away.

Your committee do not recommend expensive entertainments or excursions, but in place thereof, quiet, plain, and orderly social entertainment, a week or two of social enjoyment without restraint or embarrassment, in which the most modest and unassuming may take an active part, each one acting his individuality in his highest state of enjoyment.

We therefore recommend that all pharmacists in our country and the Dominion of Canada, who would like to meet and receive these distinguished strangers, especially those of us who are foreigners, or of foreign origin, send their names and address, with their nationality, to the committee of this Association that is to be appointed, whether he be rich or poor, proprietor or clerk, and that these names be printed and presented to each foreign pharmacist, that wherever they may travel, in the States or in Canada, they may find friends who are happy to receive them and show them American life as we live it.

Your committee would suggest that, in order to insure the success of this meeting in 1876, it will be necessary to have a successful meeting, with a full attendance, in 1875; and that this meeting should continue its sessions at least a week, and complete its arrangements for the meeting in 1876.

We would therefore recommend that the meeting of 1875 be held in Boston, as we have reason to believe that our Boston friends can give us accommodations equal to any city in the Union, and would not consider us a burden upon their hospitality.

Samuel M. Colcord,
Charles L. Eberle,
Committee.

Mr. Ebert.—This is only signed by two members, and the committee consists of five. It is not a majority of the committee.

Prof. Diehl.—It seems to me, that nearly all reports that are made, are made by chairmen of committees. The Report on the Progress of Pharmacy, and on the Drug Market, are made in that way. I cannot see why the chairman of this committee cannot present the report.

Prof. Markoe.—I understand that Mr. Colcord has used every effort to communicate with the remaining members of the committee, and the reason the report was not signed by the other members was because they failed to respond.

Prof. Procter.—The chairman of that committee appointed last year, was Professor Parrish, who has since died, and Mr. Colcord accepted the work as chairman, so that there are only four members of that committee. The report is signed by one-half.

Mr. Ebert.—Mr. Eberle was added to that committee. There are five.

Dr. Squibb.—We must take the chairman's name as a guarantee of his having consulted the remainder of the committee. We cannot go behind his

name; if he signs the report it must be a committee report, and not a minority report.

The report was, on motion, acccepted.

DR. SQUIBB.—I would suggest that the Secretary would draw the attention of the members in the Proceedings, to the fact that it is not adopted, but only accepted. We cannot adopt it, because there are recommendations that cannot be acted upon legally at this meeting; for instance, we cannot fix the place of meeting for 1875; therefore, in the Proceedings, the Secretary should append a footnote, to show the members that the recommendation could not be adopted, and that the report was only accepted.

DR. MENNINGER.—The Executive Committee have received a letter from Mr. William Grassly, of Chicago, at the close of which he tenders his resignation as a member of the Association. His letter is coupled with a complaint against the Association, and particularly against one of its officers, by Mr. Grassly. It was on the envelope, addressed to the Executive Committee, but on reading the letter, I find it is addressed to the Association. The Executive Committee deemed the letter insulting to some of the officers, and to the Association. Before reading it, I should like to ask the opinion of the Association, whether they will hear it read. At all events, after it is read, I shall, as an individual, and not as a member of the committee, move that it be not published in our Proceedings.

The subject of complaint, on the part of Mr. Grassly, arose through a footnote, put by the editor of our Proceedings, to his paper on Seidlitz Powders, as published in our last year's Proceedings.

MR. BALLUFF.—I move that the resignation be accepted without reading his letter to the Association.

DR. SQUIBB.—I rise to remark, before the question is put, whether this will not call upon us a merited criticism for injustice; whether we are doing exact justice, in accepting a resignation which has not been read, and is simply appended to a letter, without hearing the letter, and the reasons for it. I do not think it will injure any of us to hear ourselves abused, and I rather think the ends of abstract justice will probably be met, and less time taken up by reading the letter.

MR. BALLUFF.—I withdraw the motion.

DR. MENNINGER.—The committee were divided on the question of reading the letter, and therefore I brought it before the Association.

DR. SQUIBB.—If it is read before the Association, it must go on the minutes, and must be printed. I think that would be a subject worth taking into consideration before it is read. Our proceedings are supposed to be published, and if we are honest in publishing them, this letter, if read, must go on the minutes.

THE SECRETARY.—At our previous meeting, a subject was reported without going into the details, and parts of the discussion were expunged.

DR. SQUIBB.—I think it was illegal.

MR. THOMPSON.—It seems to me it may be read, and the Association decline to receive it, then it could not go on the minutes.

DR. MENNINGER.—I do not think the insults contained in the letter will hurt the Association, or the gentleman whose name is mentioned in it; it will fall harmless from the armor it strikes at. The letter is as follows:

CHICAGO, ILLINOIS, September 9th, 1873.

TO THE AMERICAN PHARMACEUTICAL ASSOCIATION.

GENTS: On perusal of the annual report of the Proceedings for 1872, in which my paper on Seidlitz Powders appeared, which was read at the meeting, I was not only surprised, but horrified and disgusted, to find that the editor had assumed responsibilities, which to my knowledge were not delegated to him, by virtue of his office, or by the demands of the occasion.

If the contributions are subject to criticism, through the editorial pen, it is a feature of the organization which I was not acquainted with. In my estimation, the papers are open for criticism and discussion, at the public deliberation, and when once referred for publication, through the sanction of the Executive Committee, the decision is final. Therefore the editor's duty in these premises is clearly defined, and when he attempts to append footnotes to the contributions, it is in open violation of the constitution, and in a spirit to cast malicious aspersions upon the work of contributors. In expressing this latter belief, I feel myself particularly assured by the fact, that the editor's criticism was fundamentally erroneous, ill-timed, uncalled for, unwarranted, misconceived, sarcastic, and consequently malicious.

This avowal is further strengthened by the circumstance, that when I requested a public correction and restitution of the unsullied facts as I had published them, my request remained contemptuously unheeded; it was only indirectly and privately that my letter was returned to me, and ambiguously and evasively noticed.

No accent of disapproval would have emanated from me, had the criticism been correct, well-timed, and justified, under the circumstances. But when one ascends to the elevation of a critic in such important matters, it is an indispensable qualification to be at least superficially posted on the question, and in this qualification your editor is degradingly deficient.

I make this to me painful explanation, with a view to obtain justice, if the article is obtainable, because I consider that the reflections which that apparently authoritative footnote (for which many will undoubtedly accept it) cast about, have seriously injured the usefulness and public acceptance of my report, and that the original purpose of it is thereby partially, if not wholly, prostrated.

Now, as I do not derive any advantage, directly or indirectly, from my connection with this body, but above all, receive this kind of gratitude for my earnest and laborious efforts and pecuniary outlay (which latter amounted to twenty-five dollars, cash out of pocket), consequently I consider that my withdrawal will entirely meet my convenience and inclination, and perhaps

the pleasure of others, and therefore, I herewith resign as a member of this Association.

Respectfully,
CHARLES WILLIAM GRASSLY.

DR. MENNINGER (*resuming*): I will state further, in explanation of the facts herein mentioned, that the letter addressed to the Secretary, in relation to the matter, was returned to the writer, as the committee have been informed by the Secretary. The letter was so insulting, that in self-respect he was obliged to return it.

THE SECRETARY.—Not privately, but through the President of the Association.

DR. MENNINGER read the footnote referred to: "The author does not state how he prevented the contamination of the precipitated sulphate of baryta with bitartrate of potassa, which must be precipitated, after adding acetic and muriatic acids, except *by heating the resulting liquid.*—EDITOR."

This is all the footnote from which this matter springs.

DR. SQUIBB.—I move that the communication of Mr. Grassly be received and placed on file, that his resignation be not accepted, but that he be expelled from the Association, for the use of indecorous language to the Association and its officers.

MR. BULLOCK.—I would like to ask a question for information: where a member of the Association tenders his resignation, and it is read, whether we have the power of laying it aside and expelling him.

DR. MENNINGER.—I hold we have the right to expel a man as long as he is a member, and he is a member until his resignation is accepted. This gentleman is still a member. I read the latter part of his letter with emphasis, for it contained a direct insult to the Association.

DR. SQUIBB.—I believe this should be spread on our minutes, and published just as it is. It is competent to refuse to accept a resignation and expel a member. The acceptance of a resignation admits a cause for the resignation; we do not wish to admit that he has cause for resignation, if expressed in this way. We do not dispute that the gentleman had a right to resign, if he had chosen to resign without using the indecorous language. We have a right to resign as soon as we are dissatisfied with our membership, but we should take care to do it decorously. A gentleman should respect himself, as well as the Association, in resigning, and it is because of the gentleman's want of self-respect, as well as his want of respect for the Association, that I make my motion. I think we have a perfect right to decline his resignation, and to expel him for indecorous treatment of the Association. There is abundant precedent in all associations I have been a member of, to show that we can receive a resignation or not, and we can expel or not expel.

MR. BULLOCK.—There is another point which we should consider. This Association is not an incorporated association; each individual is amenable for its action, and we may place our officers in an unpleasant position.

PROF. STABLER.—The gentleman has placed himself in that position. He

has offered an insult to this Association, and it is perfectly competent for the Association to expel him, and refuse to accept his resignation. I think we have sufficient cause for expelling him.

MR. EBERT.—Article X of the Constitution reads as follows: "Any member may be expelled for improper conduct, or the violation of the Constitution, By-laws, or Ethics, adopted by the Association, but no person shall be expelled unless he shall receive for expulsion two-thirds of all the votes cast at some regular session."

At the request of the Secretary, he was excused from counting the votes, and Dr. Tufts was requested by the President to perform this duty; this officer announced that fifty-eight members had voted in favor, and two against expulsion; so Mr. Grassly was declared expelled.

MR. LEIS.—I was very much taken by surprise by the communication of our retiring President. It has certainly taken us all by surprise, and necessarily makes the Association feel all the more under obligations to one who has devoted so much of his valuable time to the cause of pharmacy and for the Association since his connection with it. I would move that the fund donated by him and now deposited with our worthy Treasurer be always called the *Ebert Fund*, and also that the proceeds received from this fund and the prize-money be forever called and known as the *Ebert Prize*, and be so entered by the Secretary upon his minutes.

The motion of Mr. Leis was carried unanimously.

PROF. MARKOE.—At the meetings of the Association it seems highly desirable there should be some means by which members should recognize each other. A suggestion was made by the committee appointed to take into consideration the meeting in 1876, that at that meeting the members should use some badge. If that is useful at the Centennial, it is useful here. I rise to speak of this at the especial request of quite a number of the members of the Association who seem to be desirous that something of the kind ought to be adopted; and if a committee be appointed to decide upon some designation of that kind, particularly at the hotel, I think it would be a good thing. It often happens that members come to the meetings of the Association who are too bashful to make themselves known.

Dr. Squibb read an elaborate paper on the buying and selling of alcohol, which was accepted, and referred for publication.

DR. SQUIBB.—The table will have to be copied for the printer. I adopted the plan of going over it and omitting every alternate line or every two lines so as to correct errors. I calculated the first series, then the second series, by

the differences judging of errors. It has been pretty carefully prepared, so far as it goes. It contains more than ten thousand figures; a good many of them are a little difficult to arrive at, and therefore I have to beg the indulgence of the Association to complete this table if the Association consider it worthy of publication. I think it is one which has been much needed. It has been of importance to me as a buyer of alcohol. I do not know how many dollars I have saved by measuring over again after the gaugers. They mean to be honest, but they have a way of leaning in favor of the seller, and we are generally, in getting our alcohol, from half a gallon to a gallon short. I will hand this table to Dr. Pile, for he is an expert in that matter, and he will perhaps be able to give us a word or two on its practicability.

Dr. Pile.—This table appears to be very elaborate, but in Philadelphia I do not know what use we could put it to; we buy for what they sell. They sell us alcohol at 95 per cent., and we go home and trying it, find it is 92. We see that, but there is no remedy for it; we have to take it at that price or leave it. We cannot buy it by weight, or by absolute percentage; we must take it as they sell it to us, and therefore it would be in vain for us to try this plan, only to have the mortification of finding out how much we lose by the operation.

Dr. Squibb.—That is the object of the table; let us be no longer ignorant of the fact that we are being cheated.

Prof. Markoe.—One reason we suffer so much is the fact that the great body of buyers submit to this extortion and take no concerted action to remedy the evil. I think if some pressure were brought to bear by the united voice of the drug trade, these troubles would be remedied, like some other troubles.

Dr. Squibb.—In order to save the expense to the Society of getting woodcuts to illustrate this and another paper I have to offer, I have had them prepared at my own expense, and beg to place them at the disposal of the Association.

On motion, the thanks of the Association were tendered to Dr. Squibb, for his valuable contribution.

On motion of Dr. Nichols, from the Business Committee, the President was requested to appoint a committee of three, to select a place, and suggest the time, for holding the next annual meeting.

The Association then proceeded in a body to the exhibition-room, where they were received by the Committee on Specimens, who conducted them through the hall, calling the attention of the officers and members to the numerous articles of interest displayed. The Association subsequently adjourned, to meet again at three o'clock P.M.

Third Session.—Wednesday Afternoon, Sept. 17th.

The Association met at 3 o'clock, President Hancock in the Chair. The Secretary read the minutes of the preceding session, which were approved.

The President appointed the following Committee on the Ebert Prize: Prof. Procter, Dr. Squibb, and Prof. Maisch. Dr. Squibb and Professor Procter requested to be excused from serving on this committee, for want of time to attend to the duties properly. On motion, both members were excused, and the President announced that the committee would be appointed at a future time.

The following committee on the time and place of the next annual meeting was appointed by the Chair: Joel S. Orne, of Massachusetts, Robert W. Gardner, of New Jersey, and Louis Dohme, of Maryland.

The Secretary read the following credentials which, having been received on the day of his departure from Philadelphia, arrived too late to be placed with the other documents of the Association, and were therefore inadvertently overlooked at the first session.

CINCINNATI COLLEGE OF PHARMACY,
CINCINNATI, OHIO, September 12th, 1873.

PROF. JOHN M. MAISCH,
Permanent Secretary American Pharmaceutical Association.

SIR: At a regular meeting of the College, held on the 9th inst., the following members were appointed delegates to the American Pharmaceutical Association: John F. Judge, Jacob D. Wells, Joseph H. Feemster, Charles M. Helman, and Alfred C. Hill.

Very respectfully,
Your obedient servant,
F. L. EATON,
Secretary.

The following report was read by the Secretary:

The committee appointed to audit the Treasurer's accounts, have performed that duty, and find them correct in every particular. The committee were very favorably impressed with the accurate and neat manner in which the books were kept. It affords us pleasure on this occasion to add our testimony to the faithfulness and efficiency of our worthy Treasurer.

(Signed) N. H. JENNINGS.
B. F. STACEY.
T. ROBERTS BAKER.

The report was, on motion, accepted, and the committee discharged.

The Business Committee called up the amendment to the By-laws, laid over from the morning session, in relation to the salary of the Reporter on the Progress of Pharmacy.

MR. PEIXOTTO.—I move that the salary for the Reporter on the Progress of Pharmacy be $400.

DR. SQUIBB.—First, the By-law must be changed, and then the blank can be changed by a motion for the new sum. My object in moving for a change, was to vacate the By-law as it now stands, and make it read that the sum shall be decided upon annually. So in each future year, it will be competent and must be necessary for the Association to act upon such a motion as Mr. Peixotto now makes; that is to say, the By-law is intended to read that the sum of $ shall be in advance of the work annually awarded by the Association to the reporter for his labor.

MR. PEIXOTTO.—I will withdraw my motion, and substitute instead the adoption of the By-law as amended.

THE SECRETARY.—It would perhaps be proper to make it read, "A Reporter on the Progress of Pharmacy shall be elected annually, and shall receive from the Treasurer for his services a salary, to be determined annually."

DR. SQUIBB.—"A sum to be annually determined for his services;" or, "Such sum as may be annually determined upon."

The motion was carried, and the new By-law adopted at the first session was amended accordingly.

The Business Committee, through Dr. Nichols, called up the proposed amendment to the Constitution laid over from last year; it reads as follows:

"ARTICLE V. There shall be set apart from the funds of the Association such sum as may be annually determined, for the creation of a sinking fund for the uses and benefit of the Association, and such fund shall be invested by the Treasurer as directed in Article IV."

MR. PEIXOTTO.—I should like to ask if this is not to be laid over until next year?

PROF. DIEHL.—I would suggest that this afternoon we proceed immediately to the reading of papers. There are quite a number of reports and papers on the table, and some of the members have papers in their possession which they are desirous of reading as early as possible. I would suggest,

that before proceeding to any further business, we proceed with the reading of the papers.

MR. PEIXOTTO.—I move that the business of the Association be postponed until to-morrow morning.

The motion of Mr. Peixotto was adopted.

Mr. Rittenhouse read a paper on Flexible Gelatin Plaster in answer to Query No. 1; it was accepted and referred.

No answers were received to Queries No. 2, on Frasera Walteri, No. 3, on Liriodendrin, and No. 4, on the Culture of Lemon.

Query No. 5 being called for, Mr. Ebert stated that Professor Judge desires to have all his queries continued to him until next year.

PROF. DIEHL.—Mr. Judge informed me two of them would be ready.

MR. EBERT.—He intended to have them ready, but sickness in his family prevented him from finishing them.

On motion, Queries 5, 17, 33, and 61 were continued to Professor Judge.

Professor Bedford read an answer to Query 7 on Sapo Viridis, by Mr. P. J. Lehlbach, which was accepted.

PROF. PROCTER.—I would like to state that the sapo viridis sold in Philadelphia, or at least a portion of it, is made in Germany, from rapeseed oil to give it its green color.

Dr. Squibb read a volunteer paper entitled Note on Rhubarb, and exhibited four specimens in illustration of it. The paper was, on motion, accepted, and referred for publication.

DR. SQUIBB.—I have kept the specimens shut up until they pass round, in order that the difference in odor might be noticed; it is best ascertained at a little distance. The astringency is best noticed by putting the face close to the box, but freshly opened, the odors will be very perceptible. Box No. 1 contains the largest—all round rhubarb; that in box No. 2 is very nearly alike. No. 3 is the sample of recent rhubarb, that to me so much resembles the old-fashioned Turkey rhubarb. Its aromatic odor is very different from the others. No. 4 is a sample of true Russian rhubarb, taken from my cabinet, which I have had a good many years. The odor is not sufficient to distinguish it by now; it is changed very much by keeping.

Dr. Squibb also read a paper entitled Note on Physicians' Pocket-cases, in illustration of which he showed several styles of pocket-cases, and explained the use of the pipette furnished with them. The paper was, on motion, received, and referred for publication.

The Secretary read the following invitation received by him:

RICHMOND, VA., September 17th, 1873.

TO THE OFFICERS AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

GENTLEMEN: In behalf of the pharmacists and druggists of this city, I hereby extend to you a cordial invitation to participate with us in an excursion down James River, on the afternoon of Thursday, 18th inst., at 3 o'clock.

Very respectfully,
WILLIAM H. SCOTT,
Chairman Committee of Arrangements.

PROF. MARKOE.—I move that it be thankfully accepted by the Association.

MR. EBERT.—Is it possible that this Association can complete its labors by to-morrow afternoon? I think it would be well to deliberate whether we can accept this. Our object in coming to Richmond, or going to any city, is to do first the work we have on hand, and if there is any pleasure after that we are all willing to enjoy it; but when we come together, let us first transact our business, and afterwards, if we have plenty of time, let us use it for enjoyment.

PROF. STABLER.—I think that is the right principle. Get through with your work first, and pleasure afterwards.

MR. EBERT.—If we go to this excursion to-morrow afternoon, I think the interest of the members present will be so materially lessened, that on Friday but few will assemble to finish it. It is a wrong beginning.

DR. SQUIBB.—I regret also that these gentlemen have been so kind as they have, to give us this invitation, on account of the time it takes; but as I understand it, the arrangements have been so far completed, that it will interfere with their hospitality for us to decline. They say they will allow us to work up to half past 2 o'clock, and then leave here and get on board the boat. That will enable us to get along with our business to-morrow, so that the session on Friday morning will enable us to finish. I do not think that this will interfere with our business very much, and I do feel that there is something due to the great kindness of our friends here who have provided this excursion for us. I was in hopes that it would not have occurred, but did not succeed, and now I want to do as they are all trying to do down here, —make the best of a bad position.

The motion to accept the invitation, with the thanks of the Association, was carried.

Committee reports being called for, the report on the Pharmacopœia was offered by Professor Markoe.

MR. EBERT.—There is no such committee as the Permanent Committee on Pharmacopœia to report. It has never organized, and there cannot be a report from it. This must be an individual report from the Massachusetts College of Pharmacy, or Professor Markoe.

PROF. MARKOE.—I will say in explanation, that I was not present at the last meeting, being, as is well known by most of the members, in England at the time, and I was not aware of my appointment until my return. I labored under the impression that the rule applied to this committee that applied to the others; that the name first given should act as chairman of the committee. That impression was held by a number of the members of the committee.

THE SECRETARY.—The printed list does not state chairman after the name of any member of the committee.

PROF. MARKOE.—Many others, and it seems Mr. Ebert had also had that impression, because I received my first information of the necessity of writing such a report, by a request from him that I should so act. Under that impression I wrote the report as if I was chairman. I am very glad the explanation has been made, as I wish to assume the entire responsibility for myself. It is too late to change the phraseology in some respects, but I will say, once for all, that the committee, as a committee, are not responsible for any of the opinions expressed in the report.

The report of Professor Markoe was accepted and referred.

Queries 9, on the Preservation of Garlic, and 10, on the Emulsionizing of Balsam of Tolu, were next called up.

PROF. PROCTER.—Having omitted preparing the European variety of garlic for making experiments on early enough, the proper experiments were never carried out, and I was requested to say, if the Association are willing to continue that query, that the one to whom it was referred will carry on experiments, and send an answer the next meeting.

PROF. BEDFORD.—I will answer question 10 in one word; it cannot be done. I have tried a good many experiments to emulsionize balsam of Tolu, and it is not worth while to waste the time of the Association in writing a paper on the subject.

PROF. STABLER.—It is often desirable in making syrup of orange-peel, to use the fresh peel, and I have applied the alcohol process to preserve it fresh; heretofore it always became mouldy, rendering it unfit for use, but a gallon bottle filled with the peel, and a couple of ounces of alcohol added to it, keep perfectly.

Prof. Procter.—I might mention that one experiment was made, in which the garlic bulbs were placed upside down in a bottle, with a stem two or three inches long, and about half an ounce of common petroleum benzin placed in the bottle. The result was the garlic kept perfectly well, with the exception that when cut it was dark-colored. It was just as fleshy as when growing, but had altered in very much the same way that the alcohol process alters it, so it would not be considered in good order, although it had its peculiar odor, and was no doubt effectual.

Query 9 was, on motion, continued to Mr. Wallace Procter for another year.

A paper was read by Mr. Joseph P. Remington, as a partial answer to Query 12, on the use of Petroleum Benzin for extracting Oleoresinous Drugs. The paper was accepted, and the subject continued.

Query 13, on Colchicia, being called for, the Chairman of the Committee on Papers and Queries stated, that owing to disease of the eyes, Mr. Eberbach had been unable to finish his investigations, and desired the continuance of the subject for another year, which request was granted.

The chairman of the committee read a paper by Mr. E. D. Chipman, in answer to Query 15, on Vallett's Mass, which was accepted. Query 16 was on request continued to Mr. C. Hohly.

Professor Procter read a partial answer to Query 18, on the use of Orange-Colored Glass for preserving Volatile Oils, and exhibited a number of the samples, upon which the experiments detailed in the answer were made. The paper was accepted, and the subject continued.

The Executive Committee presented the names of the following candidates for membership, all having complied with the requirements of the By-laws:

Joseph Anthony, Richmond, Va.
David J. Bassler, Philadelphia.
Henry Bodeker, Richmond.
William B. Burk, Philadelphia.
John W. Burrow, Norfolk, Va.
Samuel Wesley Farrar, Richmond.
William Jauncey, Chicago.
Robert Lecky, Richmond.
Wm. McDonald, North Adams, Mass.
Ewen McIntyre, New York.
C. A. Nesbitt, Richmond.
D. W. Noyes, Lee, Mass.

Messrs. G. W. Kennedy and Joseph L. Lemberger were

appointed tellers, and reported the unanimous election of the candidates.

There being no answer to Query 20, the chairman referred to some ointment boxes on exhibition.

PROF. DIEHL.—Possibly the chairman of the Committee on Specimens can give us some information in regard to the very handsome cheap ointment boxes I observed on exhibition.

MR. REMINGTON.—The chairman is not here at present. I may state as information in regard to that point, that a sample of those boxes was left with me about three months ago, to see if they were practicable. I filled one of the walnut boxes with benzoinated oxide of zinc ointment, and on looking at it in a day or two, I discovered the whole box was greasy; that the ointment had gone through it; on communicating the result of the experiment to the gentleman who left the box with me, he suggested that it had been an imperfect one, and on taking the ointment out and examining it, it proved to be so. I was so much pleased with the appearance of the boxes, and the principle upon which they are constructed, that I ordered a lot of them, and since I have had them, I have been very much pleased with them. Occasionally there will be one that, from defective construction, will let the ointment or greasy matter through, but I have tried the experiment to expose them with the ointment, for three or four days in hot weather, without the ointment going through. In cold weather I think they will answer a most excellent purpose, and supersede the thick and heavy porcelain boxes that are now used. I do not think they can be called altogether *cheap* ointment boxes, as they are the most expensive boxes we use, but I find them very serviceable.

DR. MENNINGER.—I would like to ask if these boxes are in any way superior to the old gallipot, since I think there is no saving in expense from the latter. I believe they are cheaper than these boxes, and I would like to know if there is any advantage over the gallipot in their use.

MR. REMINGTON.—They are neater in appearance; the lid fits the box exactly, and gives it a much neater appearance than the gallipot, which has no lid, but has to be covered over with bladder or the like; besides that, the body of the box being so thin, it will hold more apparently than a thick material like clay, out of which the gallipots are made, so that for portability and neatness they are very much superior; they are also very strong.

MR. EBERT.—They were first exhibited at the Chicago meeting, and shortly after that I purchased a lot of them for use in my store. I think they are made in Boston, and I was much pleased with the boxes, although the first lots were not as well finished as what I have seen at the exhibition to-day. I have recently obtained a new lot, and I do not think those that I have received are equal to what are to be found downstairs; they are not finished so well. I have had the same experience that Mr. Remington has had, that some boxes hold the ointment well, while others allowed it to run through and saturate them. I never investigated the cause of it; I understood they

were saturated with gum arabic, and that was the reason it did not allow the fat to penetrate through the wood.

PROF. MARKOE.—They are made by having two sheets of wood glued together across the grain. I was speaking with the manufacturer not long since. He stated that those that leak are not perfectly saturated with glue between the two veneers, and the first lots thrown into the market were many of them imperfect. He labored under difficulty in getting capitalists to take hold of the enterprise, and the whole thing at one time threatened to fall through. I have understood, recently, that some wealthy parties have taken hold of the manufacture, and the purpose is to send out nothing but perfect goods.

The Secretary read a paper in answer to Query 21, which was accepted. Query 22 on Chiccory as an Adulteration to Taraxacum, was, at his request, continued to Mr. Rice for another year.

Prof. Procter read an answer to Query 24, on the Preparation of Cucumber Ointment, and Dr. Pile one on Graduated Measures, in answer to Query 26.

A volunteer paper, by Mr. G. W. Kennedy, on some Constituents of Frasera Walteri, was read, accepted with thanks, and referred.

Query 27, on Store-rooms, was, at his request, continued to Mr. J. F. Hancock, for another year.

Dr. Squibb read a paper by Mr. G. H. Schafer, in answer to Query 28, which was accepted.

The Secretary read the following letter.

RICHMOND, VA., Sept. 16th, 1873.

MR. JOHN M. MAISCH,

Permanent Secretary, American Pharmaceutical Association,
In Session at Richmond, Va.

DEAR SIR: It affords me pleasure to be in position to offer an exchange of our Society's publications, as a partial expression of our high appreciation of the laudable objects for which your Association is organized. You may feel assured, that whatever you may do to elevate the standard of your profession, and thereby discountenance quackery and dishonest imposition, will meet with the hearty favor and cordial support of the community in which you are assembled, and especially of the Medical Society of Virginia.

Very respectfully yours, &c.,

LANDON B. EDWARDS,
Recording Secretary, Medical Society of Virginia.

On motion of Dr. Squibb, the letter was cordially accepted, and the Secretary directed to suitably acknowledge it, and to accept the exchange of publications.

The Association, on motion, adjourned until Thursday morning at 9 o'clock.

Fourth Session.—Thursday Morning, Sept. 18th.

The meeting was called to order by President Hancock at half past nine o'clock. The minutes of the last session were read by the Secretary and approved.

Dr. Nichols, from the Committee on the President's Address and Secretary's Report, read the following report:

The committee to whom was referred the address of the President, would respectfully submit the following report:

That in their opinion, the publication in advance of the papers presented to this Association, would deprive our transactions of much of their value, and they would not be so well appreciated by our own members, nor sought for by those who do not belong to our Association. If, however, any author of a paper should request its publication in a journal, previous to the issuing of the Proceedings, we would leave the matter discretionary with the Executive Committee.

In regard to the suggession of the President, relative to the Committees on Unofficinal Formulas and Elixirs, your committee are not prepared to report intelligently, in view of the fact that a paper is to be read on the subject, which may cover the whole ground; but they desire to express their sense of the importance of this subject, in which every member of the Association should feel an interest. The members of our profession throughout the land are looking to us for action in this matter, and we would suggest that it be referred to the Committee on Unofficinal Formulas, with the understanding that it shall give us from time to time, whatever can be gathered by correspondence with pharmacists in different parts of the country, and with those colleges of pharmacy and associations who have already given their attention to the subject.

Your committee are of the opinion, that the increase in our membership must depend upon the individual efforts of the members. One man in each State can do very little in this respect, while if each member of our Association will present one new name at the next annual meeting, our numbers will be doubled, and by a continuation of this effort, we can soon encircle all the pharmacists in our land.

Your committee would recommend that the Executive Committee be directed to extend an invitation to the International Pharmaceutical Congress, to hold its session in the city of Philadelphia, in 1876, and if this is found impracticable, that they invite the pharmacists throughout the civilized world to meet with us at our annual convocation in that year, and that we appoint delegates to represent this Association at the Congress to be held in the city of St. Petersburg in 1874.

In reference to the sale of homœopathic medicines, your committee see some difficulties in the way of our Association giving an indorsement to the suggestions of the President, without revolutionizing our whole system. It would be no credit to us to take hold of this subject, unless we make thorough work of it. If any druggist chooses to add this to his business, and make his store more of a bazaar than it is at present, let him do so without our indorsement.

Your committee are not favorably impressed with the idea of creating a sinking fund for prize essays, but hail with satisfaction the inauguration of a new era by our late worthy President, whose example we trust will be followed by others, until there shall be no need of a sinking fund for this purpose. If money accumulates in the treasury, let us reduce our annual dues, and thereby relieve some to whom the payment of our present dues may be onerous.

While your committee feel the importance of making use of every available means to prevent adulteration, they see a serious objection to publishing the names of those guilty of the sophistication of drugs. We are not an incorporated body, and if such a course were pursued, any one of us might be liable to prosecution, or called upon to prove the truth of assertions made in our reports.

Your committee would recommend that this Association petition Congress to relieve from stamp tax, all medicines that are not strictly proprietary or secret in their character.

In view of the fact that the report of the Executive Committee covers the same ground as that delegated to the President, your committee would recommend the alteration of Article IX, Chapter I, of the By-laws, to read as follows:

"He shall present an address, embodying general scientific facts and events of the year, or discuss such scientific questions as may seem to him suitable to the occasion."

All of which is respectfully submitted.

E. P. Nichols,
Charles Bullock,
F. V. Heydenreich,
Committee.

On motion of Dr. Squibb, the report was accepted.

Dr. Squibb.—I now move its adoption, in order to open it for discussion. For myself, I have no objection to any part of the report to offer, except that which leaves it optional with the Executive Committee to publish, or to give others permission to publish papers, in advance of the Transactions. I think

the arguments the committee use, for not allowing any or *all* of the papers to be published, are equally good against the power recommended to be given to the Executive Committee, to grant this permission. I think it would, as the committee say, materially diminish the value of our volume of Proceedings, and materially diminish its sale, if any part of it, as well as the whole of it, should be allowed to be published before the issue of the volume. It would tend to retard the volume, and diminish the interest in it. There are many, myself perhaps included, who would apply for this permission. My papers would reach those to whom they are addressed much earlier, if I could publish them myself. I could doubtless find a journal that would be willing to publish them, and should undoubtedly apply for this permission. That objection is one that will lie against other papers as well as mine. I think they ought to be preserved for the volume of Transactions, and then let those journals that wish to republish from the Proceedings, give due credit. I would therefore move to amend, by striking out that provision.

THE SECRETARY.—I second that motion, although I am still in favor of giving permission to journals to publish either all or some of the papers. I do not believe that any interest would be detracted from the Proceedings, but I have no further arguments in favor of that position, except those which I put into my report as Permanent Secretary. I am certainly opposed to leaving it discretionary with any one. If permission is granted, it ought to be granted for every one, and not left discretionary with the Executive Committee, or with the Permanent Secretary. For that reason, I second the motion of Dr. Squibb.

PROF. PROCTER.—There is one point involved, which is priority. There are certain papers where priority of publication is very important, and where it so often happens that six months elapse between the meeting and the publication of the Proceedings, the idea of a paper will get afloat, and may be taken advantage of without any improper intention, be published, and go out to the world before the Proceedings are ready.

THE SECRETARY.—That will not destroy the priority of any author who may present papers to our Association. The very fact of a paper having been presented to our Association is known to us, and is certified to by our minutes, and it is no matter whether the paper is published now or published in ten years. That establishes the claim of the author to priority.

DR. NICHOLS.—In behalf of the committee, they were all of the opinion of Dr. Squibb, but we did not feel at liberty to say, if a member of the Association wished to publish his paper, that his wish should not be gratified, although we were opposed to doing it. The papers are the property of the Association, and they have a right to say what shall be done with them. We were opposed to granting this permission, but we felt we would bring it to the Association, and let them take such action as they thought best.

PROF. PROCTER.—In the British Pharmaceutical Conference, the papers get into print before the publication of the Proceedings; but it does not seem to prevent the publication or sale of that book.

PROF. DIEHL.—It seems to me, that the publication of these papers before the publication of the Proceedings, does not detract from them, and that it is proper that these papers should be published in any of the pharmaceutic journals wishing to publish them.

MR. EBERT.—No one would debar the publication of these papers, if our journals were able to come here and take them while being read. The moment they are read, they become public property, and if you would allow the journals that are published in this country to publish them, I do not think it would detract from the sale of our Proceedings one single copy. I believe that the more publicity we give to the work that is being done by this Association the more benefited we will be thereby.

DR. SQUIBB.—I might say that I am very well aware that there are many objections that can be offered. There are a great many good and valid reasons that can be offered on both sides of the question. One I will offer on the opposite side, although I am not particularly espousing the opposite side, for I am strongly in favor of my ground. It might deter people from bringing papers here. If a person wants to publish his paper in advance of the Proceedings, he might not bring it here; he would offer it to the journals at once; so we do not do much harm to those gentlemen who want their papers published before the Proceedings appear. In regard to priority, I agree with Mr. Maisch, that the reading of the paper here establishes it, and the reading of that paper *at that time* is the time, no matter when it is to be published. The decisions have been adverse to this, on the other side of the water sometimes, where it has been stated that when a paper is first given to the public, through the public journals, is its birth, but I do not think that has held good generally.

When this paper is read is the time when its ideas are put forth, and its priority is established. It is perfectly true that the journals might come here and abstract our papers as they are read, or take them *in extenso;* and perhaps, as soon as the Association gets to be more important, the *Tribune* or some other paper will have a reporter here, and take down *verbatim* every paper that is read, if they consider it of sufficient importance to publish. That we cannot avoid. The reporters have access to our meetings, and can report what they choose of our proceedings, but that does not detract from the fact that our volume of Proceedings, when issued to our own constituents, should be as fresh as possible. Few comparatively of our members take the journals, and they have an equal right to all the papers read before this Association, and therefore I strongly oppose any permission of any kind to be given for their publication.

THE SECRETARY.—Regarding the question of priority, I may be permitted to state, that it is customary in scientific societies, particularly the national academies of sciences in Europe, to accept deposits, even of sealed papers, for the purpose of establishing a priority. I have known such to be the case, and you can frequently find it alluded to in the proceedings of the French, the Austrian, and in the Berlin Academies of Sciences. It is done for the purpose of establishing priority to some discovery, of which even the society, or the

officers of the society, have no knowledge whatever. If afterwards any one should make a similar discovery, then the paper is opened in the presence of the society, and having been deposited at such a time, is considered a sufficient claim to the priority of the discovery.

The amendment offered by Dr. Squibb was agreed to by a vote of 26 to 13. On motion, the report of the committee as amended was then adopted.

The Business Committee called up the amendment to the Constitution, providing for a sinking fund, which was proposed at the Cleveland meeting.

DR. SQUIBB.—We have already provided for the expenditure of more money—or shall before the meeting is through—than we have, and there is no object in providing for a sinking fund, when we have nothing to put into it. Therefore, I heartily approve of the recommendation of the Committee on the President's Address in this respect.

THE SECRETARY.—There is already a provision in the Constitution for a sinking fund, although very little has come of it thus far. It says in Article IV, "All moneys received from life membership, together with such funds as may be bequeathed or otherwise donated to the Association, shall be invested by the Treasurer in United States government or State securities, the annual interest of which only shall be used by the Association for its current expenses." I should have voted against that proposed amendment, because that provides for everything.

DR. NICHOLS.—The amendment ought to be disposed of; it is before us.

THE SECRETARY.—Is it not disposed of by your report?

DR. NICHOLS.—No, sir.

THE SECRETARY.—Then I move that this amendment to the Constitution, proposing a sinking fund, be not adopted.

DR. SQUIBB.—It was presented last year, had to lie over one year, and now comes up in regular order to be adopted or refused.

The motion was carried, and the amendment rejected accordingly.

The Business Committee called for the report of the Committee on the Time and Place of the next Annual Meeting, which in the absence of the chairman, Mr. Orne, was to be presented by Mr. Gardner.

DR. SQUIBB.—I would like to ask whether it would be any use to offer a resolution to the effect that invitations to excursions for the next meeting shall be, so far as we can possibly legislate now for next year, declined in

advance. If we could take some steps whereby we might defeat the calls upon our time to go upon excursions in a body, and leave that for individual members to regulate for themselves in the way in which our hosts shall provide for us, I think it would materially add to our time for the transaction of our business. We are going this afternoon on an excursion, when we can ill spare the time. It was planned before any of us knew anything about it, and therefore it would be very ungracious indeed to decline the invitation; but if we could in some way legislate for next year, so that publication should be made in our Proceedings declining these invitations in advance, I think we should facilitate our labors very much. We see foreshadowed in one or two reports we have had presented to us this session, that it is contemplated extending our meetings over an entire week, and the time must come when we shall have to do that, but I should very much regret to see it any earlier than is absolutely necessary. I would like to avail ourselves of our time for the sessions first, before this necessity is sprung upon us, for it would interfere with many of us in being able to start and get back in the same week. I throw out this suggestion, because if anything is to be done, it should be done in advance of the knowledge of where the meeting is to be held, and if others agree with me, I should like to see it done.

Dr. Pile.—Such resolutions were passed many years ago, that we should decline invitations for excursions, in New York, and I think in some other place ten or fifteen years ago, but they amounted to nothing.

Dr. Squibb.—The resolution adopted was in regard more particularly to banquets, which require the spending of a great deal of money, in regard to which, small places felt bound to vie with large places in giving expensive entertainments. I think it had some effect; that we have not had, since the passage of that resolution, so much expense and time given to entertainment. We have had very modest entertainments since that time. John Wesley once said, "Mrs. Wesley, why do you tell that child over and over and over again twenty times?" "John Wesley, because nineteen times is not enough." I would apply that to this case; if that resolution did us no good, let us repeat it, let us keep on at the same thing, and twenty times may be enough to accomplish the object. I think we are all interested in this matter.

Prof. Procter.—I agree heartily with the plan of trying to cut off the entertainments by which the business is interfered with; but I do not think it would have any such effect as we wish it to have, by passing such a resolution. Every meeting of this Association is an independent body, doing just as it pleases, without reference to any other previous one, except so far as Constitution and By-laws go. I therefore doubt any practical good being derived from it, except so far as to pass the resolution that, in the opinion of this meeting, giving time to such purposes is decidedly disadvantageous to the interests of the Association.

The Secretary.—I would suggest to Dr. Squibb, that he prepare a resolution to this effect: that all invitations to excursions, &c., are for the future

declined, unless they be for the day after the work of the Association is accomplished, or when the Association shall have adjourned.

Mr. Badger.—Suppose you say that invitations for excursions will be declined any day previous to Friday afternoon, in any case. By Friday afternoon, the work of the Association, unless it increase very much in future, can be accomplished. By fixing the day for Friday afternoon, we should pretty nearly meet the case.

Dr Squibb.—It would be better perhaps to say after the adjournment of the Association, than to say Friday afternoon.

Mr. Badger.—That is an uncertain time.

Dr. Squibb.—It is an uncertain time, and none of these propositions meet the real objection, on the principle that one meeting cannot legislate for another. There is no legislation that we can adopt here that will be at all coercive upon the next Association meeting, as Professor Procter justly says. Still I think a resolution might be framed to say, so far as this meeting of the Association can legislate for the future, that it advise the adoption of the plan of declining invitations during the business session of the Association; then if the Association can see at some earlier session, that it will be through its business by Friday afternoon, and if our hosts choose to provide us with an excursion at that time, it will be all very well. But that does not remove the radical objection; we want to stop this expenditure of money on the part of our hosts. We are very willing and thankful to receive all their hospitality that can be awarded to us, without spending money, but these excursions are very expensive; and it is an expense that small cities, where there are few pharmacists, cannot well afford. Here is a city of sixty thousand inhabitants, and they would be able to club together, and so divide the expense, that it would not fall very heavily on any one; but if we met in smaller places, as the future probability indicates we shall, such entertainments will be a great objection. It is the tax that we place upon gentlemen who receive us that I object to more than anything else, as well as the interference with the business of the Association.

Dr. Pile.—The best thing would be, advise the next meeting not to accept any invitations, and leave each meeting to advise its successor.

Prof. Markoe.—I think all discussion on this subject is time wasted. Wherever we go, the people will in some way or other entertain us; and make all the objection you have a mind to, the sense of the Association has been in favor of accepting whatever hospitality has been shown; if that is an evil, it can be met at the time. I move the discussion on this subject be dropped.

The further discussion of the subject was dropped, and Mr. Gardner reported that the committee had agreed to recommend that the next annual meeting be held in the city of Louisville, Ky., on the second Tuesday of September, 1874.

Without further discussion, this report was accepted, and then adopted unanimously.

Professor E. Scheffer, being nominated Local Secretary, was, on motion of Mr. Peixotto, elected by acclamation.

The report of the Committee on Legislation was read by its chairman, and on motion, was accepted and referred.

Professor Bedford read the following report of the Committee on Photographic Album.

To the American Pharmaceutical Association:

The Photograph Committee would report that they have received but few additions to the album for the Association, but trust that during the coming year to receive a large number, in reply to the effort they propose to make. It is very desirable to obtain these mementos of our members, and trust they will respond promptly.

One of the members of the committee has secured about one hundred and twenty-five cards, of the officers and prominent members of the Association, and having placed them in a suitable album, has forwarded the same, on behalf of this Association, to the British Pharmaceutical Conference, where it doubtless reached by the opening of its session just closed this day.

Respectfully submitted on behalf of the committee,

P. W. Bedford.

The report was, on motion, accepted and adopted, the committee was discharged, and the President directed to appoint for the current year a Committee on Album, consisting of five members.

The President announced the appointment of the following committee on the Ebert prize: Charles Bullock, Wilson H. Pile, and John M. Maisch.

The report of the Committee on the Drug Market was read by its chairman, Professor Bedford, and on motion, was accepted and referred.

The Chair announced the Committee on Photographic Album as follows: P. W. Bedford, New York; Charles A. Tufts, Dover, N. H.; Joseph P. Remington, Philadelphia; Robert J. Brown, Leavenworth, Kan.; and E. H. Sargent, Chicago.

The Association ordered the reading of papers, and Query No. 29 was, on motion, continued to Mr. J. M. Ayres for another year.

Professor Procter read a paper, which was accepted, on the Literary Instruction of Apprentices, in answer to Query No. 30.

Professor Lillard read a volunteer paper on Homœopathic Pharmacy, which was accepted and referred.

DR. SQUIBB.—This paper comes in very well as an illustration of the report of the Committee on the President's Address. It shows that the nicety and care with which these preparations are made, certainly unfits them for any ordinary apothecary shop. These dilutions would be increased to a fearful extent by the smell of sulphurous acid, or the odors of the apothecary store. There could be no trituration that would be honest, take place in any shop I know of. The preparations would be so contaminated by the odors of the store, as to render them entirely unreliable.

Dr. Garrigues read an essay on American Bromine Production, in answer to Query 11, which was accepted and referred. He then exhibited some nutgalls collected by him near Huntington, W. Va.

DR. GARRIGUES.—On my way here through Cincinnati last week, I had a short conversation with Professor Wayne. He called my attention to specimens of American galls, but could not give me the insect which produces them.

PROF. PROCTER.—Does Dr. Garrigues know the species of oak?

DR. GARRIGUES.—I do not know. I think it would be a subject for a paper. I understand that Prof. Diehl will recommend the subject for investigation. There is one with the insect with it.

PROF. MARKOE.—Mr. Saunders will perhaps identify that insect.

MR. SAUNDERS.—I might remark, there are a large number of species of gall made by different insects affecting the oak; they seem to be very deficient in the quantity of tannin they contain, judging from their taste, and I doubt whether they would ever be of much value. It would be easy to have this species determined, and if the gentleman will let me have the specimen, I will have it determined for him.

DR. SQUIBB.—I have been told by Dr. Manlius Smith, who was very competent authority, that the American gallnuts, as well those from oak as those from sumac, are a very good source indeed for gallic acid. They have been used for many years for the production of gallic acid.

Query 31, on the Keeping of Poisons, was answered by Mr. Charles L. Eberle, in a paper read by Dr. Squibb, and Query 32, on the Insect Enemies of Drugs, by Mr. William Saunders; the same gentleman also read a volunteer paper on the Mexican Honey Ant, and exhibited specimens of the insect.

Mr. Bullock.—I should like to ask Mr. Saunders whether he is sure they are ants.

Mr. Saunders.—There is no doubt about their being ants.

Mr. Bullock.—The description I have heard of them is not so nearly allied to the genus Formica, that I have had my doubts whether they are ants.

Mr. Saunders.—Mr. Krummeck sent specimens of the workers without the distended abdomens, and they are identical in every respect except that. They had just the appearance of the yellow ant. There can be no doubt about their being ants.

Dr. Squibb.—Those who want a more extended account will find it in one of the numbers of *Nature*, where a very interesting description of the detail of their economic habits is given.

Dr. Squibb read two volunteer papers, accompanied by specimens of apparatus and preparations, the one describing various apparatus, the other detailing his observations and experiments on Ergot and some of its preparations. Both papers were accepted and referred.

Dr. Squibb.—This subject deserves to be further investigated, and I would like to see a query on it. We know that ergot grows on all the cereals, and also on the grasses, and if any one going through the meadows will examine the ergot, from the grasses up to rye, he will have an ascending scale; that from the oat is more feeble than from barley, from barley more so than from wheat, and from wheat more feeble than the rye; so it seems its original habitude is the rye; and if so, then we ought to stick to our rule of obtaining it from the rye. I have here a vial of extract. I find it best put up in vials which will show its character. The lightness of the brown color is due to the admixture of air, and this admixture renders a larger vessel necessary to hold an ounce of it. An ounce bottle will not hold an ounce, because it contains ten per cent. of air mixed with it from the stirring necessary to get it to the proper standard.

The committee called up Query 34, on the causes of the turbidity of some solutions of Chloral.

Prof. Diehl.—I have no answer to this query to make. My duties in connection with the report on the Progress of Pharmacy prevented me from making the experiments that were necessary to elucidate this question. I understand that the query originated with Dr. Squibb, and I think it is of sufficient importance to be further investigated. I, however, cannot accept the query again, but if any one else will accept it I should be glad to add it to list of queries for next year. However, I would like to call attention to an observation I have made. In making some prolonged experiments upon the subject, I discovered accidentally that the same chloral, under certain

circumstances, will dissolve perfectly clear, or will dissolve forming a turbid solution. I found when water is added in the proportion of one drop to a scruple of Schering's chloral, then triturated thoroughly, and the necessary amount of water to perfectly dissolve the chloral is then added, a turbid solution is formed; but if the chloral is rubbed to a fine powder, and the necessary quantity of water is then added at once, a clear solution is formed. I do not know the cause of this different behavior. I made no further experiments, and cannot say to what this peculiarity is owing, but this subject is quite interesting, and will probably throw some light on the subject of this query.

An essay by Mr. Charles L. Eberle on Query 35, in relation to the proper strength of Alcohol for Tincture and Fluid Extract of Columbo, was read by Professor Diehl, and accepted.

Query No. 36, on the relative weight of the capsular integuments, and the seeds of different varieties of commercial Cardamom, and on the comparative aromatic value of the separated seeds, received no answer.

On motion of the Committee on Papers and Query, it was resolved that all queries for which answers are not received, be dropped unless their continuance is requested.

Query 40, on the purity and hydration of Commercial Burnt Alum was continued to Mr. Thomas Starr for another year, his experiments not being completed to report at present.

A paper by Mr. H. J. Rose, on the purity of Commercial Tartaric Acid, was read and referred.

Mr. Remington.—I went over that ground about two years ago. I notice Mr. Rose has not sought for sulphuric acid. It seems to me that that is a more common impurity than anything else that has been mentioned. I found it present in almost every one of the samples, and sometimes in quite large quantities, as much as to cause the acid to appear wet, and attract moisture and have a tendency to cake.

Prof. Bedford stated that his experiments on the strength and purity of commercial so-called chemically pure acids are not completed, and requested the continuance of Query 43, which was granted.

The report of the Committee on Elixirs being called for, Dr. Nichols was requested to occupy the Chair, and Mr. J. F. Hancock read the report.

MR. HANCOCK.—This report is necessarily an imperfect one. I have not been able to consult satisfactorily with the other members of the committee, but I have received an expression of ideas from two of its members, Mr. Brown and Mr. Steel. There was some little confusion in our opinion upon the subject, and therefore this report is now made only so far as I have been able to go. The list of formulas is necessarily limited, and to illustrate them, I have brought samples; as the cook says, when you talk about the pudding, the best test is to taste it. The first formula is for a compound of cochineal. That is simply a coloring substance, and I think I have reached a greater degree of success than others I have seen. This is made with dilute alcohol, and brings out all the color of the cochineal; it makes a very beautiful and permanent color. Then I have adopted for a flavoring basis the spirit of sweet orange, and made it uniform with the spirit of the Pharmacopœia. Then I give a formula for the simple elixir, a sample of which I have here. I tried twenty or thirty experiments to find out the very best and most acceptable simple elixir; I also adopted an elixir, which I call the red elixir. I did not intend to bring it forward, but I showed it to several physicians who seemed to be pleased with it. One physician commenced ordering it immediately, and said it worked nicely as a carminative. I have constructed a simple formula for elixir of Calisaya bark, which seems to be a good one, and if iron is to be used, the addition of a small proportion of citric acid prevents the tannate of iron being formed to any great extent. I have shown this simple elixir to quite a number, and it has received the indorsement of the physicians and pharmacists, so far as I have shown it; they seem to be very much pleased with the idea of a simple elixir. In giving quinia or fluid extracts, this simple elixir can be used as a basis, and it is immaterial whether the quinia be too large in quantity to be completely dissolved. It is conveniently administered with this elixir.

PROF. MARKOE.—I would like to make one suggestion in regard to elixir of orange-peel. Mr. Hancock suggests making it by using oil of orange. That is a very difficult thing to get in the Eastern markets. I understand through the southwestern country, sweet oranges are obtained at all times of the year. It has been my practice, and of many of my friends, to keep a tincture of the fresh orange-peel. Take a two gallon bottle, and weigh into it a known quantity (say ten pounds), of deodorized spirit, and then whenever a little orange-peel is got, chop it up fine, or bruise it and put it in the bottle, and so let the quantity accumulate. When digested for use, I have adopted as a convenient strength, a strength of tincture that shall represent six troy ounces of the fresh undried peel to the *pint*. By this means you get a delicacy of flavor that it is absolutely impossible to get by means of any oil, no matter how fresh it may be; and such a tincture is far better than the solution with the oil.

MR. HANCOCK.—I have used a tincture made as suggested by Professor Markoe for a long time, though it has not been made with that care as to quantity which he observes. I have had the good fortune to have a friend who prepares it for me. It is prepared in South America. I fill the bottles, such bottles as Patterson's magnesia comes in, with alcohol, and put them

on shipboard, and he pares the orange-peel off and puts it in the alcohol. I have used that saturated tincture of the fresh orange-peel for a long time, and really it seems to me finer than that which we get in our market. I pour off that tincture and use it to a large extent for flavoring purposes—in making bitter wine of iron, for instance—and after I have poured off this saturated tincture, I throw the remainder into a still, add water, and distil off a very nice spirit of orange, which is used also to great advantage as a flavor. I think it would be a good plan to adopt this tincture made from the oil, but if any gentleman desires to adopt this better process, he can do it. The spirit of orange, if you are careful to get a nice oil of orange, is all that can be desired.

DR. SQUIBB.—I would like to ask the President whether we are not a little encroaching upon our time?

THE SECRETARY.—In regard to this subject, I have prepared one or two resolutions which I think will not create any discussion; if they should, I wish to have them deferred.

Resolved, That the report be adopted with the recommendation that these formulas be used by the members of the Association; and that the Secretary be instructed to send a printed copy with the report to the medical societies of the United States, with the suggestion that physicians if prescribing elixirs at all, prescribe only such formulas as have been adopted by this Association. The object is, to attain as nearly as possible, a uniformity in the United States.

The other resolution is:

Resolved, That Mr. J. F. Hancock be appointed the Committee on Unofficinal Formulas.

Both resolutions were adopted, and the committee was discharged.

MR. EBERT.—I would like to ask for instructions in regard to the Permanent Committee on the Pharmacopœia. We are not organized, and if it goes on in this way, we will never do any work. It is only through the Massachusetts College, or one of the committee, that we have had any work this year. If we are a committee, let us do some work. The original motion for the appointment of this committee was, that it should be constituted of one member from every incorporated organization represented here, whether it is a college or association.

PROF. DIEHL.—Our college was excluded last year, because not at that time incorporated.

MR. EBERT.—We now have some twelve teaching colleges which are incorporated, and they ought to be represented on this committee.

MR. MARKOE.—I move that all the delegations of those incorporated colleges which are not represented in the committee, be requested to nominate some one of their number, to serve on this committee, and to report at a future meeting.

The resolution was adopted.

The Executive Committee reported the following applications for membership: William A. S. Conrad and A. A. Scott, Richmond, Va.

Messrs. R. W. Gardner and C. W. Badger were appointed tellers, and reported the unanimous election of the candidates.

On motion of the Business Committee, the following committees were continued, namely, on Adulterations and Sophistications, on Legislation, on Liquor Dealer's License of Apothecaries, and on Infringement of the Stamp Tax.

Dr. Squibb's name was, at his request, withdrawn from the Committee on Liquor Dealer's License, the President appointing Mr. R. W. Gardner, of New Jersey, to fill the vacancy.

It was moved and carried, that the thanks of the Association be tendered to the retiring officers, after which the Association adjourned until 9 o'clock to-morrow morning.

Fifth Session.—Friday Morning, Sept. 19th.

The Association met pursuant to adjournment, President Hancock in the chair. The minutes of the preceding session were read and approved.

The Business Committee called up the amendment to Article IX, Chapter I, of the By-laws, proposed in the report of the Committee on the President's Address (see page 81), referring to the subjects to be discussed by the President in his annual address. The proposed alteration is as follows:

"He shall present an address, embodying general scientific facts and events of the year, or discuss such scientific questions as may to him seem suitable to the occasion."

Mr. Ebert.—Would it not be well to adopt an amendment that this address shall be offered at the opening of the session?

Dr. Squibb.—I think not, for the reason that the organization is not completed until the reports of several committees have been received.

The question being taken on the proposed amendment, it was adopted.

Dr. A. W. Miller read the report of the Committee on Specimens, which was, on motion, accepted and referred for publication.

A letter from Mr. J. T. Buck was read by Prof. Diehl, referring to a reaction occurring between tincture of gelseminum and nitric acid; on motion, it was ordered to be entered on the minutes and the subject referred to the Committee on Papers and Queries.

RICHMOND, VIRGINIA, September 18th, 1873.

PROF. JOHN M. MAISCH.

DEAR SIR: I hand you below a query, which, if you think worthy of a place, you will please submit for acceptance. I have tried various tinctures, besides alcohol itself, and have never seen this reaction attend any other; there seems to be a chemical change. The mixture is frequently prescribed in our town (Jackson, Miss.), and is invariably attended by this reaction.

Truly yours,

JOHN T. BUCK.

QUERY: Tincture of gelseminum and nitric acid when mixed (equal bulk), is attended with violent effervescence, with the escape of nitrous fumes; followed by diminution of bulk and some loss of color. What is the cause and what the chemical result of this reaction?

Query 38, on the purity of commercial Subnitrate and Subcarbonate of Bismuth, was, on motion, continued to Mr. Thomas F. Main, his experiments not being completed to be reported at the present meeting.

The Committee on Papers presented two essays from Prof. J. F. Judge, in answer to Queries 33 and 61, having reference to the influence of heat upon preparations of sarsaparilla, and to the best menstruum for the fluid extract of the same drug. The former essay was read, accepted, and referred, and, on motion, the remaining two queries, Nos. 5 and 17, on the use of Paper Pulp for filtering, and on the origin of Sulphur in commercial Iron by hydrogen, were dropped, in compliance with the request of Prof. Judge.

DR. SQUIBB.—I would like to say that the question should properly have been divided, because the hot steam bath, in the ordinary acceptance of the term, is a current of hot steam directed against the bottom of a jacketed vessel. With steam thus used under pressure, a vessel may be heated to 260° or 270°, and that is what is too commonly meant by the term steam bath.

What Mr. Judge means by a steam bath is where a vessel is set over boiling water, and steam is thus used without any pressure as the source of the heat.

Mr. Balluff.—If it is conceded there are no sensible medicinal properties in sarsaparilla, the question might have been at once dismissed.

Dr. Squibb.—If this be generally conceded, I for one do not join in such concession; because I know that good sarsaparilla has very valuable medicinal properties. Sarsaparillas that have no sensible properties—including Jamaica—are in my judgment worthless; but the variety from the river Amazon and its tributaries—upon which the original reputation of the drug in medicine grew up—if of good quality, will sustain its reputation, and still yield definite results.

The Secretary.—Is he right in using 92 per cent. alcohol?

Dr. Squibb.—No; two parts of that and three of water is a better menstruum.

The Secretary.—I believe that is the true menstruum, the active principle being more soluble in dilute than in strong alcohol.

The Committee on Papers stated that Mr. Greve desired to be excused for not presenting at this meeting an answer to Query 2, on the constituents of Frasera Walteri, he having been absent in Europe. The query was dropped, it having been answered in a volunteer paper by Mr. G. W. Kennedy, read at the third session (page 79).

Dr. Squibb.—I would like to propose an amendment to the By-laws, to come up at the next annual meeting. It is to increase the salaries of the Permanent Secretary and Treasurer, each by the sum of $100, making the sum for the Secretary $600 instead of $500, and that of the Treasurer $400 instead of $300. We are all aware of the addition to the labor of these gentlemen. Every additional meeting increases the number of members, and the larger our roll becomes the more is the labor of these gentlemen piled up. We desire in some way to acknowledge this, not pay for it, because we know the labor cannot be adequately paid for by anything we can offer; but as an acknowledgment of the increase of their labor, I think it proper from time to time we should increase their salaries. I also propose to fill the blank that has been left in the amendment to the By-laws, in regard to the Reporter on the Progress of Pharmacy, by the sum of $400, instead of $250, as was proposed originally. I am well aware that that is not adequate payment for the duty, but I think that the reporter will be satisfied with this sum for this year. I have not consulted him about it, but I feel sure that I may speak with confidence and say I believe he will not only be satisfied with it, but would do it for nothing. The Treasurer tells me he thinks the current funds of the Association will stand this expenditure for this year, and so far as they will stand it I feel willing to go. If the current funds would stand the sum

of $500, I should be better satisfied with that, so far as my individual opinion goes. But as it will not probably stand it this year, I propose the lower sum of $400. I make a motion to fill the blank with that sum.

The motion of Dr. Squibb, that the salary of the Reporter on the Progress of Pharmacy be $400 for the current year, was adopted. The proposed amendment to the By-laws, to increase the salaries of the Permanent Secretary and Treasurer each by the sum of $100, was laid over until next year.

The Committee on Papers and Queries read the following letter from Mr. Sharp, referring to Query 44; it was, on motion, ordered to be entered on the minutes.

MR. C. LEWIS DIEHL.

DEAR SIR: In response to Query 44, the writer will say he has endeavored to confine himself to the simple question of obtaining a solution of quinia free from all caustic or irritating acids and of the required strength,—thirty grains of the salt to each fluidrachm; which point I regret to say has not been satisfactorily reached, from the fact of being unable to find any solvent for the sulphate or its equivalent in quinia, that is, 26½ grains of the latter to the fluidrachm. Nor do I think it possible to obtain it, hence have no formula to propose. As the subject is an interesting one, and hypodermic injections have become so common, would suggest a continuation of the subject in this form: What is the most desirable solution of quinia for hypodermic injections?

Please explain when the question is called.

Yours truly,
A. P. SHARP.

Dr. Squibb read a paper by Mr. E. H. Squibb, on the preservation of solutions of Alkaloids by Carbolic Acid, in answer to Query 45, and exhibited a number of samples in illustration of the results obtained; the paper was, on motion, referred.

DR. SQUIBB.—I would call attention to the experiments made by Mr. Paul, on the question whether these confervæ grow at the expense of the alkaloids, and that it is now considered to be established, that these solutions of the alkaloids become weaker and weaker with the growth of confervæ.

The living organisms do not feed on the useless and leave the active matter. This fallacy that the starchy matters only are consumed, has been popular in the drug trade in former times, culminating in the common absurd doctrine, that worm-eaten drugs are better than sound, because stronger. It will be observed, that one vial of sulphate of atropia failed to produce any

confervæ, even though unprotected. The second series was made in pairs, that is to say, with the same strength of carbolic acid, and the same exposure to the light; and yet, one of a pair will show more confervæ than the other. The two exceptions, wherein a low degree of protection, with a small quantity of the carbolic acid, gave the lowest quantity of confervæ, were made with one-fiftieth and one-sixtieth of one per cent. These were the confusing results, but by taking the whole series of pairs, there was an evident and very marked change in the production of confervæ, from the highest to the lowest grades of protection, until about one-tenth per cent. of protection was reached. The solution protected by a small quantity, would grow confervæ in fine large tufts, as we are in the habit of seeing them in unprotected solutions. Those protected by a little larger proportion of the disinfectant, would grow them smaller, without any other characteristic difference. The tufts would be like little shot rolling round unattached in the bottle. Then a little further on in the series, these would diminish in size, and have a shrivelled appearance, and as time passed, would become brown, and assume a lifeless appearance. Still further on, as a proportion of one-seventh of one per cent. was approached, the confervæ gradually disappeared, growing very sparsely, and in clouds distributed through the solutions. Excepting then the accidental confusing results, the confervæ diminished in quality and vigor of growth throughout the series, and the net result was, that one-seventh of one per cent. was the proportion at which the confervæ failed to appear. It may be useful to emphasize the point made, that filtered solutions, made with undistilled water, required about twice this amount of carbolic acid to protect them, namely, one-third of one per cent. This comparatively large proportion has been tried, and found not to be irritant in such preparations as Magendie's solution.

MR. BULLOCK.—It might perhaps throw out a hint to some of our members, to mention that a solution has been adopted for microscopic objects, which has answered very well for plants, and which is camphor-water. In some cases, I have found that by the addition of a small amount of alcohol, say a drachm to an ounce or two of camphor-water, and this diluted to about half the strength, a solution is obtained in which confervæ will not grow.

DR. SQUIBB.—In extending the remarks of Mr. Bullock, I might say, that the phenols or any of the, by Kekulé, so-called aromatic series, will produce the same effects. Oil of cloves, oil of sassafras, and many other substances, in about the same proportion as carbolic acid, will produce the same effect, but they are less soluble in water than carbolic acid. Carbolic acid is a little more effective and more convenient, because it is a uniform compound, which if adopted will effect the object by a definite proportion. Cresol is still more effective than carbolic acid or phenol, but it is less easily obtained, is less soluble, and does not keep well. The so-called impure carbolic acid No. 1, distilled from coal-tar creasote by me for many years back, protects better than carbolic acid itself, but is not so nice. In the first series of experiments, we find that the solution with the impure carbolic acid No. 1, or dark liquid preparation, protected them better; that is to say, there were more in the series that were protected than there were in the other series, and the growths

were smaller with the crude or more impure, and that was probably because it contained the cresol as well as the phenol—the cresol probably in a larger proportion; so we are not confined to carbolic acid, but in case we cannot get carbolic acid, we may go to any of the phenols, or any of the aromatic series.

THE SECRETARY.—In regard to the protection of organic solutions against confervæ growth, I have tried to take advantage of the more aromatic odor of the oil of eucalyptus, that has lately appeared in the market. I have a large number of specimens, which I preserve in a solution of chloride of sodium. That solution generally becomes covered with a very thick mould; if I add to that aqueous solution some carbolic acid, it will be protected entirely. For some I have used oil of eucalyptus, on account of the pleasant odor, but I found it did not protect them at all. The growth was apparently as large and voluminous as without this addition.

DR. SQUIBB.—That is very curious, since eucalyptus contains a phenol.

THE PRESIDENT.—I would like to make a remark in regard to Magendie's solution of morphia. I have had great difficulty in keeping it; it soon changes. At the annual meeting of the Maryland College of Pharmacy, a letter was communicated to that body by Professor Christopher Johnson, in which he stated, that the addition of four drops of sulphurous acid to an ounce of morphia solution would preserve it indefinitely from change. I immediately tried it, because this trouble had annoyed me, and I have now in my store, a solution made in that way, with four drops to the ounce, which has been made for several months, and there is not a particle of change in it. I noticed it a short time before I came here, and it was my intention to bring a sample. It seems to preserve it perfectly. He uses it for hypodermic injections, and it was my intention to extend this to other alkaloids, but for want of opportunity it has never been done.

DR. SQUIBB.—I saw that publication, and it occurred to me as being a nice way of protecting sulphates, but it will not do to protect salts of other acids than sulphuric, because sulphurous acid is gradually changed into sulphuric acid, which would then set free most other acids, and might render the hypodermic solution irritant.

MR. REMINGTON.—I do not know whether the confervæ belong to the same species we find in distilled water, but I have had, in common with pharmacists, a great deal of difficulty in keeping distilled water. I have known it to change in the short time of three or four days. I remember, while I was in Dr. Squibb's laboratory, a lot of distilled water that we had there changing in a week. It was filled with a microscopic growth, and it would be interesting to me to know whether it is the same growth that we often see in dilute phosphoric acid. My opinion in regard to it is, that it is much the same thing, and I suppose that either of those substances that have been mentioned, would answer quite as well for the dilute phosphoric acid as for the organic alkaloids.

DR. SQUIBB.—This is a broad subject, and I do not like to take up too much time, but it seems useful to mention a plan I have adopted lately, and have

recommended once or twice to others, as a way of preserving distilled water. Let a bottle be made chemically clean, and be fitted with a good clean cork or rubber stopper. Pierce this stopper with two holes for glass tubing of good size. Let one piece of tubing pass through the stopper so as to reach the bottom of the bottle, and project about half an inch above the stopper, and tie this end over with a double fold of clean muslin. Let another piece of tubing be bent at right angles, and having passed one end just through the stopper, tie the other end over with a double fold of muslin. Then fill the bottle entirely full of distilled water, which may have had the least practicable air contact, and put the stopper, as above described, in place. When the water is needed from time to time, it is poured out through the short bent tube, while the air which enters to replace it, is filtered, and passes in through the straight tube. In this way, if the water be free from the spores of confervæ, as it usually is when freshly distilled with care, it will remain free, since only strained air can get access to it. When the bottle is not in actual use, the neck and tubes are nicely protected from dust, by means of an inverted beaker, whose lip rests on the shoulder of the bottle. By tying over the air entrances to my distilled-water receiver and distillatory apparatus in this way, I have had no trouble from confervæ for some two or three years past. Distilled water carefully made by washing the steam in boiling distilled water before condensing it, and then kept in this way, will answer all purposes, and for any reasonable time. The new process for silvering looking-glass plates is the most critical test for distilled water that I know of, and water so prepared and kept answers the purpose well, while all other seems to produce spots and imperfections in the decomposition of the salts of silver. I know of one house in New York that has spent some $15,000 in attempts to get distilled water to answer this delicate purpose, and after adopting my plan, they have had no trouble, so far as I know.

Query 48, on the active principle of Pokeroot and Berries, was continued to Mr. Fredigke for another year.

As a partial answer to Query 46, the Secretary read a paper on the behavior of Chloral Hydrate to test-paper, concluding from his experiments that this compound has not a neutral, but a distinct acid reaction to litmus.

The President vacated the chair, and Vice-President Saunders was requested to preside.

The Secretary read a paper on the method of assaying Cantharides and their preparations, in answer to Query 47.

Mr. B. F. Stacey read a volunteer paper on Indian Remedies, which was accepted with thanks, and referred to the Executive Committee. A paper by Professor Oldberg, on Weights and Measures, was directed to take the same course.

Dr. Nichols read a paper on a liquid preparation of Vanilla, in answer to Query 62, and Professor Diehl an essay by Professor Judge on fluid extract of Sarsaparilla, in answer to Query 61. Both papers were accompanied by specimens of the preparations.

PROF. DIEHL.—It is my experience that the presence of alcohol is necessary in the fluid extract of sarsaparilla. I advocate the use of a little sugar along with the alcohol. My method of preparing fluid extract of sarsaparilla has been to reserve from each sixteen troy ounces of sarsaparilla percolated by dilute alcohol the first eight ounces that pass; then to exhaust the sarsaparilla, evaporating the remainder to four fluid ounces, and dissolving in them six troy ounces of sugar; the two portions are then mixed, and the preparation finished. This does not deposit. I have kept it from one year's end to another, dispensing it continually, and the preparation did not deposit except to a very small extent.

Query 64, on the poisonous principle of Sneezeweed, was called for.

MR. MAISCH.—I would state that I accepted that query, to be answered by one of our students, who intended to work on it last winter under my supervision, but on account of sickness he could not complete his analysis. The subject is now in the hands of another young man who has already obtained some very interesting results which will probably be published before our next annual meeting, and I, therefore, suggest that the query be dropped.

The query was dropped, and No. 69 called up, relating to the deposit occurring in tincture of Bloodroot.

MR. DOHME.—I have not obtained sufficient information to be able to report; I will offer it as a volunteer paper, should I obtain more satisfactory results.

Mr. A. E. Ebert read a volunteer paper by Mr. Moith relating to the intercourse between Physicians and Apothecaries, which was, on motion, referred to the Executive Committee.

The Secretary showed a sample of muriate of cinchonia, which for some years has been largely sold in the United States as a fraudulent substitution of sulphate of quinia.

THE SECRETARY.—I have a very important subject to lay before the Association which relates to a portion of the report of the Committee on Adulteration and Sophistication, namely, to the adulteration and sophistication of quinia. It has lately come to my knowledge, from a pretty good and very

reliable source, that the old fraud which was exposed a few years ago by Mr. Bullock, and to which attention has repeatedly been drawn, of substituting sulphate of quinia by muriate of cinchonia is carried on to a very considerable extent. The market for this is probably to a considerable extent closed against it in the larger cities, at least as far as I am aware of it, but Mr. Luhn, of Charleston, S. C., informed me that, according to his observation, large quantities of it are sold, particularly in the interior portions of the Southern States. He has some of it here, and has handed me a sample, which has the usual appearance of the muriate of cinchonia, and resembling sulphate of quinia. It would be very interesting to find out where that fraud is perpetrated. The article is put up in vials resembling French quinia; having the same kind of label, and everything about it being apt to mislead apothecaries. I understand from Mr. Luhn that the article is sold in the southern market about fifteen cents an ounce less than the quinia of American manufacture. He at one time received a considerable invoice of it from a New York house, and the probability is, that the article is made and put up in the city of New York. I think it is very important that here, in a southern State, and particularly in the city of Richmond, attention should be drawn to it.

Mr. Markoe.—I have here a sample which I think may prove of some interest to the members of the Association. It may not be generally known to the members that a large portion of the city of Richmond is built upon a very extensive deposit of what is known as diatomaceous earth, consisting almost entirely of the silicious skeletons of little microscopic plants, which are generally termed diatoms. For a long time it was a dispute among the naturalists whether they were animals or plants. They are considered one of the lowest orders of vegetables, endowed with the power of motion. They are furnished with silicious skeletons, and have long been celebrated and admired by microscopists for their beautiful shape and the exquisite delicacy of their structure. In many specimens they are so delicate they have come to be the test by which to judge of the optical excellence of microscopic lenses. One that bears the name of Amphipleura pellucida is very delicately marked, having from 75,000 to 90,000 lines to the inch, and it requires objectives of the highest order to resolve these fine marks. Another application which will perhaps be of more interest to the pharmacist can be made of this earth. Being composed entirely of silex, and being exceedingly fine, it is admirably adapted for the purpose of polishing metals, and some of the most celebrated of the polishing powders in the market consist of this earth, or earth of a similar character from different portions of the country, for these deposits exist to a great extent in many localities throughout the country. Examined under the microscope, they consist of nothing else but diatoms, liable to be mixed, however, with sand and more or less organic matter. The sand can be removed by elutriation with water, the organic matter is burned away, and the result is a perfectly white silicious powder, which makes one of the best polishing powders for metals. If it is carefully prepared it will not scratch. To prepare it for the microscope, it is to be carefully cleansed, and the organic matter destroyed by boiling in acid, and the most perfect and unbroken frus-

tules selected. Richmond earth is very valuable to the microscopists who study diatoms, having a very large number of species, representing some of the more important genera.

One thing more in regard to these diatomaceous deposits: after careful washing and being ignited they make an admirable substitute for carbonate of magnesium in making aromatic waters, having the great advantage over the carbonate of magnesium of being absolutely insoluble in water, and, if carefully prepared, almost impalpable. The extremely minute state of subdivision in which the silex is obtained in this earth has led some manufacturers of silicate of sodium to use it in preference to sand. This form of silex goes into solution more easily than any other. I was told by one of the manufacturers of solution of silicate of sodium that all his supplies were manufactured from this form of silex.

Dr. Squibb.—One word in reference to the subject that just preceded this; the substitution of cinchonia salts for those of quinia. I have long thought that the manufacturers of sulphate of quinia were in some degree responsible for those frauds. It is well known that sulphate of cinchonia is a rather abundant product in the manufacture of sulphate of quinia, and, therefore, at any price at which they can sell it, it adds to their profits. It is the source of supply of all the cinchonia in use, it being very easy to change it from the form of sulphate into that of muriate; if they would refuse to sell their sulphate of cinchonia in bulk, or to place it where liable to improper uses, I think they would in a measure control the substitution of the cinchonia salts for those of quinia. For example, many of the proprietary forms of febrifuge medicines are known to be mainly cinchonia salts. Sulphate of cinchonia is officinal, and is legitimately available in treating malarious diseases. If given in much larger doses it will answer many of the purposes of sulphate of quinia, and its value is not generally well enough known, but it should be sold by the manufacturers in a guarded way, and in such form as to offer the greatest possible obstacle to its conversion into muriate or other form of substitute for quinia. Indeed it would seem better to throw it away if they cannot otherwise prevent its wholesale substitution for the more valuable quinia.*

* In a trade circular published by the Philadelphia Drug Exchange, after the adjournment of the meeting, it is stated, "1. That the *American* manufacturers of sulphate of quinia do not dispose of the cinchonia salts indiscriminately to any who apply for them, but only to regular customers who pay for them; and 2d, so far from being responsible for this attempt to defraud the people, they purposely avoid handling *muriate of cinchonia*—they do not make the article. They have not only declined making, but refuse to deal in, the article of *muriate of cinchonia*, on account of its close resemblance to *sulphate of quinia*. *Muriate of cinchonia* is largely sold in *Europe*, but not in this country, so far as sulphate of quinia manufacturers are interested." The inference from this statement seems to be, that the parties practicing the fraud noticed in the above discussion cannot obtain even *sulphate of cinchonia* from the American quinia manufacturers, and that they most likely derive their supply of *muriate of cinchonia* from Europe; if the latter be the case, the drug inspector at the port of New York may probably be able to name the importers of the latter salt; at

The Executive Committee presented applications for membership from the following gentlemen:

Powhatan E. Dupy, Richmond.	J. W. Smith, Norfolk, Va.
Joseph N. Willis, "	W. A. S. Taylor, "

Messrs. Remington and Kennedy were appointed tellers, and reported the unanimous election of the candidates.

Professor Diehl read the report of the Committee on Papers and Queries, which was accepted and referred.

MR. DIEHL.—I think we have all cause to congratulate ourselves on the number of queries that have been answered. Of the forty-seven queries propounded in 1872, thirty-nine were accepted by members, and eight left for general acceptance. The number answered of the thirty-nine was twenty-one; the number of queries continued last year was twenty-three, and the number answered only two; it shows that the chances of obtaining answers to queries that are continued is very small. On the other hand, we have twelve volunteer papers, making the number of papers read at this meeting thirty-six.

List of Queries to be answered at the Twenty-second Annual Meeting in 1874, at Louisville, Ky.

The Committee on Papers and Queries report the following as having been accepted for the meeting of 1874, viz.:

1. American Extract of Licorice is regarded, by a recent investigator, as of superior quality, and is found to yield a large percentage to water. Does not such extract contain an admixture of Gum or Dextrin?

Accepted by Adolph W. Miller, Philadelphia.

2. Recent examinations of commercial Bismuth preparations in Europe have determined the presence of appreciable quantities of silver in them. Do the bismuth preparations in this country contain any Silver, and are they free from Arsenic?

Accepted by Joseph H. Feemster, Cincinnati.

3. What is the solubility of commercial Sulphate of Morphia in water?

Accepted by M. L. M. Peixotto, New York.

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any rate the attention of the proper authorities should be directed to the above for the adoption of such measures as may prevent the importation of an article used as a fraudulent substitute for sulphate of quinia, which is such an indispensable necessity in many localities of our country.—EDITOR.

4. Commercial Sulphate of Potassium, in the European markets, is stated to contain a large percentage of Sulphate of Sodium. Is this true of the Sulphate found in the American markets?

Accepted by P. W. Bedford, New York.

5. What is Cincho-quinine?

Referred to Albert E. Ebert.

6. What is Bromo-chloralum?

Referred to S. S. Garrigues.

7. An essay on the botanical and chemical character of American Nutgalls.

Referred to E. S. Wayne.

8. Powdered Blue Mass. What is an easy and convenient mode of preparing a mercurial powder to fully represent the officinal Blue Pill?

Accepted by John F. Hancock, Baltimore.

9. Medicated Waters. How do the waters prepared from the oils with Magnesia compare with those distilled from the fresh ingredients?

Accepted by N. H. Jennings.

10. The relation of Physician and Pharmacist. Is the pecuniary compensation of the Pharmacist adequate in comparison with that of the Physician?

Accepted by E. P. Nichols, M.D., Newark, N. J.

11. Oleate of Mercury has lately occupied the attention of pharmacists, and many processes for its preparation have been proposed. How may Oleic Acid be readily and rapidly prepared, in a condition sufficiently pure for preparing Oleate of Mercury?

Referred to Charles Rice, N. Y.

12. An essay on the preparation of the various bromides of the organic and inorganic bases used in American pharmacy.

Accepted by Charles Bullock, Philadelphia.

13. What is the relative quantity of Extract of Quassia prepared with water, and prepared with dilute Alcohol?

Accepted by Joseph S. Whall, Boston, Mass.

14. What is the minimum quantity of Gum Arabic that can be used to emulsify perfectly the fixed oils, volatile oils, and balsams?

Accepted by C. M. Helman, Cincinnati, Ohio.

15. Can the formula for Scammony Resin (U. S. P.) be improved, and what is the objection, if any, to the exhaustion of Scammony by Alcohol at ordinary temperature and simple evaporation of the tincture?

Accepted by Prof. George F. H. Markoe, Boston, Mass.

16. What is the most desirable solution of Quinia for hypodermic injection?

Accepted by A. P. Sharp, Baltimore.

17. Why do some of the diluted Phosphoric Acids of the market form precipitates with tincture of Chloride of Iron, while others do not?

Accepted by Louis Dohme, Baltimore.

18. When equal volumes of tincture of Gelseminum and Nitric Acid are mixed, violent effervescence results, with evolution of nitrous fumes, diminution of volume, and some loss of color. What is the cause and what the chemical result of the reaction?

Referred to Charles C. Fredigke, Chicago.

19. What are the advantages of making Suppositories by moulding over the method of making them by hand?

Accepted by George W. Kennedy, Pottsville, Pa.

20. An examination of commercial Carbonates of Magnesium for Carbonated Alkalies.

Accepted by P. W. Bedford, New York.

21. An essay on Pancreatin, and the various pancreatic preparations in use.

Accepted by F. E. Heydenreich, Brooklyn, N. Y.

22. Does water extract all the purgative principles of Rhubarb, and is the alcoholic percolate of rhubarb, after its exhaustion with water, inert?

Accepted by Charles A. Heinitsh, Lancaster, Pa.

23. An essay on the active constituents of Bitter Orange-peel, with special reference to the bitter principle.

Accepted by R. H. Stabler, M.D., Alexandria, Va.

24. An examination of commercial Benzoin. What amount of impurity does it contain, and what are the relative proportions of benzoic and cinnamic acid?

Accepted by W. H. Brill, Allegheny, Pa.

25. A comparative examination of the juice of the root and of the flower-stems of Taraxacum dens-leonis.

Accepted by S. Mason McCollin, Philadelphia.

26. There is a petroleum product called Cosmoline, having claims to considerable merit. Can its claims be established by experience, and to what pharmaceutical uses can it be put?

Accepted by Joseph L. Lemberger, Lebanon, Pa.

27. How do the Ergots from the grasses, barley, wheat, oats, &c., compare with the Ergot from rye in medicinal effect?

Accepted by Dr. J. A. Miller, Harrisburg.

28. Can a permanent consistency and specific gravity be imparted to solid extracts by the addition of Glycerin, without injuring their quality?

Accepted by Prof. O. Oldberg, Washington, D. C.

29. What preference is shown to graduates in Pharmacy, as compared with non-graduates, and how do their salaries compare?

Accepted by P. Balluff, New York.

30. How do the salaries of drug clerks compare with the salaries of clerks in other business, and with those of skilled mechanics?

Accepted by H. N. Rittenhouse, Philadelphia.

31. Can statistics be obtained of the number of druggists in the United States, and can they be classified into a few general classes?

Accepted by B. F. Stacey, Charlestown, Mass.

32. An essay on Calabar Bean, giving the readiest method of attaining the various pharmaceutical preparations, and isolating its active principle.

Accepted by G. W. Kennedy, Pottsville, Pa.

33. What is the quality of the Iron by Hydrogen of the market?

Accepted by J. L. A. Creuse, Brooklyn, N. Y.

34. What is the character of the principle to which the bitterness of Eupatorium perfoliatum is due?

Accepted by A. Boyd, Utica, O.

35. What is the state of purity of commercial Santonin obtained from various sources?

Accepted by Frederick Hoffmann, New York.

36. Can the Alkaloids of Cinchona be extracted together in a crude form, yet sufficiently pure to permit a ready detection of adulterants; and if so, can the process be profitably carried out by the pharmacist?

Accepted by Randal Rickey, Trenton, N. J.

37. Medicinal Soap. Mr. G. H. Barkhausen gives, in *Archiv für Pharmacie*, pp. 20–21, January, 1878, a process for preparing medicinal soap, as follows: 100 parts of olive oil are mixed with 150 parts of an alcoholic solution of caustic soda, containing 12 parts of the latter. The mixture is heated to 212° F. until solution is effected, 200 to 300 parts of water are added, and the solution is evaporated to dryness. One of the advantages claimed is that it contains a minimum quantity of alkali. Can this soap be substituted with advantage for Castile soap in the preparations of our Pharmacopœia, into which soap enters as a constituent?

Accepted by A. N. Marion, Baltimore.

38. An examination of commercial Citrate of Iron and Quinia for its quinia strength.

Accepted by Linus D. Drury, Boston, Mass.

39. An essay on Granulated Effervescent Compounds.

Accepted by R. V. Mattison, Philadelphia.

40. How may concentrated preparations from Aromatic Drugs be best prepared, so that the preparation shall be permanent, and represent all the active constituents of the drug?

Accepted by Prof. George F. H. Markoe, Boston, Mass.

Respectfully submitted on behalf of the Committee.

C. LEWIS DIEHL,
Chairman.

Dr. Nichols on behalf of the Business Committee offered the following:

The American Pharmaceutical Association is now about to close its twenty-first annual session, in the capital of the Old Dominion. Some hesitation was felt at the last meeting in deciding on this place, but the success of our experiment at Cleveland induced us to repeat it. The kind courtesy and generosity of our reception, the unbounded "Old Virginia" hospitality of the pharmacists and citizens of Richmond, and the beautifully appropriate welcome of his Honor, the Mayor of the city, have dispelled every doubt of the propriety of our selection. Nothing has been left undone that could add to our comfort and pleasure, and when we leave this place to return to our homes, we shall carry with us pleasant recollections of this visit, which will not soon be effaced from our memory.

As a faint expression of our warm appreciation of the kindness shown us,

Be it resolved: That the hearty thanks of this Association be, and are hereby tendered, to the pharmacists and citizens of Richmond, for the cordiality of our reception at this, our first visit to the "Sunny South."

THE PRESIDENT.—In this hour of closing, and before this motion is put, I would like to say a few words. I desire to address the pharmacists of Richmond, not in reference to their cordial reception, but to refer briefly to the objects of the American Pharmaceutical Association. The object of the American Pharmaceutical Association is to do good, to advance pharmacy, and to draw into its ranks all who feel interested in the progress of pharmacy. The excursion feature of the Association is merely incidental. These receptions are simply the outpouring of the warm-hearted people with whom we meet. It has been decided by this Association, not to accept any reception that might be extended, at least not to accept any expensive entertainment on the part of the local members, and with this idea, or upon this ground, the Association decided last year to go to Richmond without any invitation. It invited itself here, not to receive the hospitality of the pharmacists or the citizens of Richmond, but it came here in order that it might extend its usefulness. During the war, the members of the Association in the South, I believe, to a great extent, were severed from their connection with us, and probably some feeling that we felt hard against their section, may have kept them from coming in. We have had no feeling of hostility, but on the contrary, we had the kindest feeling towards them, and we desired to come into

their midst, and to extend to them, the hand of fraternal greeting. For that reason (I believe I speak the sentiment of the Association), we decided to go to Richmond, that we might extend our usefulness in the South; that we might bring into membership the pharmacists, not only of Richmond, but from all sections of the South. We came, expecting nothing; we expected to pay for what we received; we came to extend the hand of fraternal greeting to the pharmacists of the South, asking nothing in return, except their hearty co-operation with us, in the objects of the Association. But before reaching Richmond, or the opportunity was offered to extend the fraternal greeting, the hand of cordial reception was extended to us, by the Committee of Reception, of the pharmacists of this city. In that we discovered a happy feature, apart from the kindness which was indicated toward us; we found in that, that pharmacists of Richmond had met together, and if they had not formally organized, they had at least organized a Committee of Reception, and it had brought together, I believe, many of the pharmacists of Richmond, who had been comparative strangers before, and in that we were happy to have such a reception. Now, we believe, that as this cordial reception was extended before the hand of fraternal greeting could be extended, that there is a condition of friendship and fidelity existing between the pharmacists of all sections of this country, that we have long desired should exist, and that *all* desire to bury the past, with all its horrible features, in oblivion. It is hoped that the meeting of this Association will be fruitful of good results in this community. I would like to urge at this last hour of our meeting, upon the members of the pharmaceutical profession in Richmond, to organize into some formal body. The infant must crawl before it can walk; it must be nourished and strengthened before it can stand on its feet. If the pharmacists of Richmond are not able to organize a pharmaceutical college, let them organize a pharmaceutical association. If it be simply a *literary* association, let them organize an association in which they can assemble and meet together, and bring the members from all sections of the city together, and let them immediately commence the work of mutual benefit in this respect. They can come together and compare notes, they can bring their essays and communications, and from such a movement it is impossible to tell what the final result will be. In this connection, I am reminded of the very appropriate remarks, which were made by the late Professor Parrish, when on an occasion like this, we started a little in advance of the meeting, to be held in St. Louis two years ago. A number of the members of the Association met at Harrisburg. We proceeded on such an excursion trip as we have inaugurated this year, stopping at Altoona, and then proceeded to Pittsburg. It had been announced by our Secretary, that these gentlemen would stop there for a day, and to our surprise, the pharmacists of Pittsburg turned out in strong numbers—those who had been strangers to each other, and gave us a warm reception. They did not only meet us, and extend the hospitalities of the city; they carried us to the points of interest in the city, and our stay there was exceedingly pleasant. In the evening, it was suggested by Professor Parrish, that an informal meeting be held, in one of the parlors of the hotel,

and that the pharmacists of Pittsburg be urged to attend, as many as possible. The result of that suggestion was, that quite a number of the pharmacists did assemble, and then Professor Parrish suggested, that they go immediately into a permanent organization. The idea was no sooner suggested than it was caught up, with the hearty approval of the profession in Pittsburg, and they did organize there and then; and I remember well, the very appropriate remark of Professor Parrish on that occasion, which seemed to have, as it were, an electric influence. He said: "You have now been called together, because of our presence among you, and this is the best opportunity that has ever been offered, for you to organize as a pharmaceutical association. Do not let time intervene between now and the time when you propose to organize, but organize immediately." Said he, "When we were going through the foundries in this city to-day, by your kind invitation, I noticed that the iron was made hot in those furnaces before the hammer was applied to it, and I remind you, pharmacists of Allegheny and Pittsburg, to 'strike while the iron is hot.'" I repeat the words of Professor Parrish now, "While the fire of pharmaceutical interest is raging in your midst, strike while the iron is hot!" and we will be glad to hail at the next meeting of the American Pharmaceutical Association, to be held in Louisville, a delegation from the Pharmaceutical Society of the city of Richmond.

The resolutions offered by the Business Committee were seconded by Dr. Squibb, and unanimously adopted.

The following resolution was then offered by the Business Committee:

Resolved, That the thanks of this Association be tendered to the Press of this city, for their attention and their efforts to make public the reports of our proceedings.

DR. SQUIBB.—I think this deserves more than a passing remark before it is put. I do not remember, that we have ever had so faithful reports, with so few errors, which are always to be expected when reporters come among us. We have had fewer, so far as I can learn, than we have ever had before, and also had a more faithful and thorough report of our proceedings. I therefore think this motion is rather more than an ordinary one, and we should consider these things when we are thanking them, and thank them heartily for the attention and the ability with which they have reported our proceedings.

The minutes of the last session were read and approved; after which the Association adjourned, to meet in the city of Louisville, on the second Tuesday of September, 1874, at 3 o'clock, P.M.

JOHN M. MAISCH,
Permanent Secretary.

The excursions to and from Richmond, to attend the twenty-first annual meeting, were participated in by a larger number of members than those to any previous meeting. Professor J. F. Judge had made the arrangements for the Western members coming *via* Cincinnati, and Mr. J. F. Hancock for those members going by way of Baltimore, while Professor Bedford had arranged for a sea-voyage from New York *via* Norfolk.

The excursion party leaving Cincinnati on Saturday, September 13th, was unfortunately detained upon the Ohio River by low water, and could not for this reason make the railroad connections in time to carry out the original programme of spending Sunday at White Sulphur Springs, and reach Richmond Monday evening.

The excursions arranged for the Eastern members were more successful, although ten or twelve failed to join the main party, having been detained in Long Island Sound by foggy weather. The steamer George Leary, which left Baltimore for Norfolk on the afternoon of Saturday, September 13th, carried a party of fifty-five ladies and gentlemen, who received every attention by the officers of the Bay Line steamers, as they proceeded down the Chesapeake Bay, and early on Sunday morning passed Fortress Monroe and up Hampton Roads to Portsmouth and Norfolk, in which latter city they were to await the arrival of the steamer from New York. On Sunday afternoon the officers of the Bay Line steamers placed a tug-boat at the disposal of the party, and various points of interest in the neighborhood were visited, among them the celebrated Gosport navy yard. Soon after the party had landed again at the wharves of the Bay Line steamers the "Old Dominion" neared her landing-place, carrying a party of forty-nine ladies and gentlemen, bound for Richmond, to attend the meeting. Owing to an accident to the machinery of the James River steamer, which was to take the party coming from Baltimore to Richmond, the passengers were transferred to the Old Dominion, which vessel proceeded again, early on Monday, upon her voyage up the James River, passing numerous points

of interest in the history of the State of Virginia, as well as of national importance.

It was shortly before dusk, a few miles below, but in full sight of the city of Richmond, when the Old Dominion was met by two barges, with a portion of the Committee of Reception of the Richmond pharmacists and druggists, headed by the chairman, Mr. T. Roberts Baker. The barges landed the combined party at Rocketts, where omnibuses and carriages were in waiting to convey them to the "Exchange Hotel and Ballard House," which establishment had been selected as the headquarters of the members during their stay in Richmond.

With unbounded liberality, the friends of the Association had placed carriages at the disposal of the members and their families during their stay in Richmond, and members of the Reception Committee were constantly in attendance to point out the historical and most beautiful localities in and around the city, and to accompany the ladies and members as guides.

On Thursday afternoon, the members of the Association and the exhibitors at the meeting, with their ladies, by invitation of the Richmond druggists, embarked at Rocketts upon the barge Greenbush, to which were attached the steam-tugs Frank Somers and W. P. Craighill, which were handsomely decorated with the colors of the United States and of other nations. Nearly every pharmaceutical establishment of the city was represented on board. His Honor, Mayor Keiley, the Faculty of Virginia Medical College, and a number of prominent physicians and citizens were present, and accompanied the party upon the excursion down the James River. Powhatan, Drury's Bluff, Chaffin's Bluff, and many other historic places, made famous during the early and more recent history of Virginia, were pointed out, and many incidents in connection therewith related. The boats passed through the Dutch Gap Canal, then turned in the river, and again proceeded back towards the city. Mayor Keiley being called upon for a speech, addressed the company, recalling some incidents of the war, and congratulating those present, repre-

senting most of the States and all the sections of the reunited Union, upon the happy occasion which brought them together. In language of elegance and eloquence he alluded to the old flag, and the men of Massachusetts and Virginia now again working together in fraternal accord for the good of the whole country. Speeches were also made by Mr. James Slade, of Boston; Dr. C. A. Tufts, of Dover, N. H.; Prof. G. F. H. Markoe, of Boston; Rev. Dr. C. C. Bitting, and Prof. J. B. McCaw, of Richmond; Messrs. J. F. Hancock, of Baltimore; H. A. Vogelbach and J. M. Maisch, of Philadelphia. In the course of his remarks, Mr. Vogelbach read a series of resolutions passed by the party that came to Richmond *via* Baltimore, by the steamer George Leary, returning thanks to the officers of the Bay Line for kindnesses bestowed upon them, and to Mr. Hancock for the preparations made by him to insure a pleasant voyage. The trip was enlivened by music from the First Regiment Band, and by singing by a quartette of Richmond amateurs. A handsome collation was served, and the excursion terminated pleasantly in every respect at about 8½ o'clock, when the boats reached Rocketts again, to land the delighted excursionists.

For the same evening a hop had been arranged in the ballroom of the hotel, and a number of couples amused themselves by dancing to the music of a good string band.

After the final adjournment of the meeting, on Friday noon, quite a number of members visited Petersburg, with its remaining fortifications, and in the evening many left, northward bound, to visit on Saturday the public institutions of the National Capital, while most of the Western members travelled homeward, with the intention of spending a day or two at White Sulphur Springs, a pleasure of which they had been deprived on their eastward trip by the failure of making timely connection with the train at Huntington, W. Va.

Nearly the whole of the remaining members left Richmond in the early train on Saturday morning, paid a visit to Mt. Vernon, and reached Washington, D. C., by the steamer Arrow, at about five o'clock, P. M.

Thus ended one of the most pleasant reunions of the American Pharmaceutical Association, at which the members and their families were the recipients of old Virginia hospitality, so renowned throughout the country. Arriving in the City of the Seven Hills almost entire strangers, the unbounded cordiality, the open-hearted liberality, and the fraternal welcome of its pharmacists, druggists, and citizens in general soon made every one feel at home, and the remembrance of the week so pleasantly spent on the beautiful banks of the James River will not soon be effaced from the memory of those who attended that meeting, at which the Association—as Mayor Keiley pleasantly remarked—attained its majority, and celebrated its twenty-first birthday.

JOHN M. MAISCH,
Secretary.

REPORTS OF COMMITTEES.

REPORT OF THE COMMITTEE ON FORMULAS FOR ELIXIRS.

"*Resolved*, That a committee of five be appointed by the President, to take into consideration the subject of elixirs and similar unofficinal preparations, in all its bearings upon pharmacy, and if deemed proper, to report suitable formulas for the guidance of the members of this Association."

THE universal solvent has been long sought for, but has not, and most likely will never be found, and it is quite as unlikely that the formula for a simple elixir will be found which will afford a preparation that will meet all the requirements of a medicating vehicle; yet it may be possible to meet the general indications of a simple elixir, by which many unpleasant medicines can be modified in taste and odor, and rendered tolerant to the most delicate stomach, without modifying or changing in the least their therapeutic properties.

To arrive at most satisfactory results, a series of careful experiments were instituted, which we believe have furnished good results. The formulas resulting from our experiments, which we herewith have the honor to present, are accompanied with corresponding preparations. It will be observed that this report has its restricted limits, and it is not our purpose to recommend a long list of useless combinations, which might savor of empiricism and tend to deceive physicians.

In our conclusions we may be criticized by those who have apparently accomplished the task of constructing formulas for simple elixirs, as also those who have adopted such formulas. In this, however, we have no aspirations to vain glory,

but have simply followed in the track of duty, performing to the best of our abilities the task imposed upon us. Therefore we invite the scrutiny of this Association, before any final judgment has been passed upon our work.

Elixirs are not a new class of preparations: on the contrary, they are very old; and after all they remind us of the adage, "Nothing new under the sun."

We doubt very much that the elixirs of any age ever partook more of the character of nostrums than those of the present day, and were it not for the fact that we are conscious that all trades, professions, and classes of men have their follies, we would express horror at the pharmaceutical folly, as manifested in the modern elixirs; nor is there anything which reminds us more of the "Mithridate" of old, or the "Theriaca" of mediæval times, than the class of pharmaceuticals known as elixirs.

For if we examine, it will be found that almost all contributors to the elixir literature have indicated their respective formulas by the greatest multiplicity of ingredients; indeed, they sometimes exhibit the greatest variety of remedies, representing the three grand divisions of nature,—animal, vegetable, and mineral; for instance, elixir of beef, bark, and iron, &c.

The greatest commendations which we can bestow upon elixirs as a class is, that they are too feeble to do much harm, even when they contain strychnia, and that they act splendidly as placebos; particularly is this the case with those purporting to contain the *bitter alkaloids*, and are so very pleasant to the taste, that scarcely a particle of bitter can be detected. Just here your committee deem it proper to state, that they have not been able to overtake some of the elixir manufacturers, in the act of giving quinia, strychnia, and other bitter remedies, in clear solution, without giving at the same time their characteristic bitter taste. This may be for want of greater experience in this line, or perhaps for want of a more profound understanding of the pharmaceutic art, in the domain of *elegant pharmacy;* or it may be for want of a better understanding of the demands of the medical profession and

the public for pleasant medicines. We have endeavored (as the accompanying samples will attest) to place the ingredients indicated by the formulas in the vials, while those who have excelled us in the art of completely masking bitterness, may possibly have the active principles only represented by the label. Indeed, we may be excused for such a conclusion, from the fact, that it has been discovered, that many of the so-called preparations of phosphate of iron are made by substituting pyrophosphate of iron, and that many of the elixirs of Calisaya bark, *so called*, are not made with the *bark*, but from variable proportions of one or more of its salts; ferrated elixir of Calisaya, and many other elixirs, stand in the same deceptive list. This may or may not be warranted, from the plea of precedence, but respect for truth and consistency compels an adverse judgment on our part; and to finally meet this pharmaceutical depravity, your committee would most respectfully recommend a correction of the elixir nomenclature, and when possible, to give names that will correctly represent the compounds in question.

It therefore becomes necessary to drop the names elixir of Calisaya bark, ferrated elixir of Calisaya, and the like, unless made from the bark. If made with quinia or cinchonia, iron, &c., the name should be given so as to represent that the preparation is the simple elixir ferrated, with quinia, or the name of whatever active medicines may be combined with the simple elixir and iron.

It is advisable that physicians should abandon the popular habit of ordering A., B., and C.'s elixirs, particularly if they are proprietary, and the formulas withheld from pharmacists and physicians, which, as a rule, is unjust to the dispensing pharmacist, who is in most cases fully as competent to make the compounds *secundum artem* as is the special elixir manufacturer. The manufacture of preparations for, and the compounding of, physicians' prescriptions, should be an open competition, intrusted only to thoroughly qualified pharmacists. If this be granted, it is then unfair for the physician to command the pharmacist of one city to employ a pharmacist in a distant city to prepare the remedies for his prescrip-

tions, except in very remarkable cases. It is further suggested, that physicians use the simple elixir or red elixir, and extemporize with them such remedies and in such proportions as the individual cases may indicate, regardless of the beautiful appearance of the preparations, whether or not they be *solution* or *mixture*. The pleasant taste and odor of the simple elixir qualifies it pre-eminently as a vehicle for the administration of quinia, strychnia, iron, bismuth, pepsin, &c., as also any of the solid and fluid extracts. The extemporized elixirs should not be filtered, but always dispensed, if necessary, with the direction: "Shake the vial before pouring out each dose," as by filtration the medicinal quality of the elixir is sometimes sacrificed for the sake of good appearance.

The members of the committee being absent except its chairman, some confusion is experienced in making this report, from the fact that two others of the committee have suggested some formulas, which, being at variance with our views, because of the multiplicity of ingredients, are omitted. Therefore, the report which we now have the honor to present, is essentially a minority report, or only that of the chairman of the committee. The plan which we respectfully recommend is similar to that adopted by Professor C. Lewis Diehl, which was published some time ago in the pharmaceutical journals, viz., the adoption of a formula for simple elixir, to be used as a general medicating vehicle; and to fully meet the reasonable demand for elixirs, a list of formulas is herewith submitted, simple in construction, easy of manipulation, and believed to be fully as efficient in medicinal properties as are those more complex.

In our aim at simplicity, we have endeavored to harmonize with the treatise of Professor Diehl on the subject, and in some cases have given his formulas, as will be shown by notes of explanation. In all cases, however, where simple elixir is ordered, that made from the formula given in this report is intended.

For want of time, and owing to ill health during the early part of this year, the subject has not received that thorough attention which it deserves, and which it was our intention

to give. Experience suggests the inexpediency of continuing the committee, because the members have not the convenience of easy communication, living as they do in remote parts of the country; and, believing that one member of the Association, drawing his information from various sources, can make a more satisfactory report than the several members of a committee, we would advise that the committee be discharged from the further consideration of the subject, and that the whole question be referred to the Committee on Unofficinal Formulas. Should the Committee on Unofficinal Formulas give that attention to the work which it so richly merits, an interesting and profitable report may be expected at the next annual meeting of this Association.

Should this committee act in an eclectic capacity, doubtless much valuable information will be gained that may be useful to the Committee on Revision of the Pharmacopœia. The investigation should not be restricted to any particular branch of pharmacy, but include the entire range of unofficinal formulas.

UNOFFICINAL FORMULAS.

REPORTED BY J. F. HANCOCK.

Compound Powder of Cochineal.

Take of Cochineal in powder,	120 grains.
Alum, in powder,	120 grains.
Carbonate of Potassium,	120 grains.
Bitartrate of Potassium,	240 grains.

Mix. Keep in well-stoppered vial.

Compound Tincture of Cochineal.

Take of Compound Powder of Cochineal,	120 grains.
Diluted Alcohol,	2 fluid ounces.

Slightly warm the diluted alcohol and mix with the powder, macerate in a stoppered vial for twelve hours, and filter for use. This is permanent, and imparts a beautiful red color to elixirs and solutions which have no acid properties.

Spirit of Orange.

Take of Oil of Sweet Orange,	1 fluid ounce.
Stronger Alcohol,	15 fluid ounces.

Mix. This is made in proportions to conform with the spirits of the U. S. P., and is a pleasant and convenient form of orange flavor.

Simple Elixir.

Take of Spirit of Orange,	½ fluid ounce.
Stronger Alcohol,	4 fluid ounces.
Cinnamon Water,	6 fluid ounces.
Syrup,	6 fluid ounces.

Mix.

This is a turbid mixture. For many purposes it is not necessary to filter before using, but generally it should be clear, particularly when used for physicians' prescriptions, and in making some elixirs. Filtering-paper pulp, made by beating scraps of chemically pure filtering-paper in a mortar, in the proportion of sixty grains of paper to half fluid ounce of water, added to sixteen fluid ounces of the elixir, agitated briskly for a few moments, and filtered, renders the elixir perfectly limpid. The paper is free from the chemical objections urged against carbonate of magnesium, chalk, &c., which are frequently used as clarifying agents.

The very pleasant taste and odor of this elixir, its freedom from color and chemical impurities, commends it for general use as a medicating vehicle.

Red Elixir.

Take of Comp. Tincture of Cochineal,	½ fluid ounce.
Simple Elixir,	16 fluid ounces.

Mix.

This is sometimes preferred as a simple elixir because of its beautiful color.

Elixir of Calisaya Bark.

Take of Tinct. Cinchona, U. S. P., 1870,	22 fluidrachms.
Simple Elixir,	sufficient to make 16 fluid ounces.

Mix and filter. This contains *the virtues* of two grains of Calisaya bark in one fluidrachm.

Elixir of Calisaya Bark with Iron.

Take of Elixir of Calisaya Bark,	. . . . . .	15 fluid ounces.
Warm Distilled Water,	. . . . . .	1 fluid ounce.
Citrate of Iron, *soluble*,	. . . . . .	128 grains.

Dissolve the iron in the warm water and add the elixir. Filter if necessary. Each fluidrachm of the unfiltered elixir contains one grain of the iron salt, and the virtues of nearly two grains of Calisaya bark.

Compound Elixir of Cinchona.

Take of Compound Tinct. of Cinchona, U. S. P., 1870,		22 fluidrachms.
Simple Elixir,	. . .	sufficient to make 16 fluid ounces.

Mix and filter. If not required for immediate use, this and also the Calisaya elixir should stand for about twelve hours before filtering.

Compound Elixir of Cinchona with Iron.

Take of Compound Elixir of Cinchona,	. . . .	15 fluid ounces.
Warm Distilled Water,	. . . . . .	1 fluid ounce.
Citrate of Iron, *soluble*,	. . . . . .	120 grains.

Mix. Proceed as for Elixir of Calisaya with Iron.

Elixir of Citrate of Iron.

Take of Citrate of Iron, *soluble*,	. . . . . .	256 grains.
Warm Distilled Water,	. . . . . .	1 fluid ounce.
Simple Elixir,	. . . .	15 fluid ounces.

Dissolve the iron in the warm water and mix with the simple elixir. Filter.

Elixir of Pyrophosphate of Iron.

Take of Pyrophosphate of Iron,	. . . . . .	256 grains.
Warm Distilled Water,	. . . . . .	1 fluid ounce.
Simple Elixir,	. . . .	15 fluid ounces.

Make according to directions for Elixir of Citrate of Iron.

This is the same in medicinal strength as Professor Diehl's formula.

Elixir of Citrate of Bismuth.

Take of Citrate of Bismuth and Ammonium,	. . .	256 grains.
Warm Distilled Water,	. . . . . .	4 fluid ounces.
Water of Ammonia (drop by drop),	. . .	sufficient.
Simple Elixir,	. . .	sufficient to make sixteen fluid ounces of finished elixir.

This is the same bismuth strength as Professor Diehl's formula, viz., two grains of citrate of bismuth and ammonium in each fluidrachm.

Elixir of Pepsin.

Take of	Saccharated Pepsin, Scheffer's formula,	256 grains.
	Sherry Wine,	14 fluid ounces.
	Simple Syrup,	2 fluid ounces.
	Fluid Extract of Ginger,	25 drops.

Dissolve the pepsin in the wine, mix the fluid extract of ginger with the syrup, and mix altogether. Filter if necessary. Contains two grains of pepsin to the fluidrachm.

Elixir of Valerianate of Ammonium.

Take of	Valerianate of Ammonium in crystals,	256 grains.
	Compound Tinct. of Cochineal,	½ fluid ounce.
	Simple Elixir,	15½ fluid ounces.

Dissolve the valerianate of ammonium in two ounces of the simple elixir, and carefully add water of ammonia until the solution is exactly neutral to test-paper. Mix with the balance of simple elixir, and then add the compound tincture of cochineal.

This is the formula of Professor C. Lewis Diehl, with the exception of the simple elixir. Notwithstanding this preparation contains a larger quantity than usual of the valerianate of ammonium (two grains of the salt in each fluidrachm), yet its unpleasant taste and odor is effectually masked by the fragrance of the simple elixir.

Elixir of Valerianate of Ammonium with Quinia.

Take of	Sulphate of Quinia,	128 grains.
	Elixir of Valerianate of Ammonium,	16 fluid ounces.

Mix. Filter if necessary. Sulphate of quinia is soluble in elixir of valerianate of ammonium to twice the quantity here ordered.

Compound Elixir of Sumbul.

Take of	Tincture of Sumbul (Brit. Ph. 1867),*	4 fluid ounces.
	Syrup,	4 fluid ounces.
	Compound Tincture of Cochineal,	½ fluid ounce.
	Elixir of Valerianate of Ammonium,	8 fluid ounces.

Mix.

* This is made by macerating and displacing two and a half ounces avoirdupois of powdered sumbul with proof spirit, so as to obtain one imperial pint (f℥xix, fʒiss., U. S. measure) of tincture.—EDITOR.

The elixir is slightly turbid, owing to the resin of the sumbul, which, if filtered out, must lessen its medicinal powers. This is given as a type of *extemporaneous elixirs*, which should not be filtered, but dispensed with the direction, "*Shake the vial before pouring out each dose.*"

Elixir Pyrophosphate of Iron, Quinia, and Strychnia.

(C. Lewis Diehl's Formula.)

He says: "This requires particular manipulation, which precludes the use of simple elixirs.

"The following formula, the result of concert experiments of my friend, Mr. E. Scheffer, and myself, has been used by me since autumn, 1869, and I can recommend it as uniformly successful, when the manipulations are carefully conducted:

"Take of Sulphate of Quinia,	60 grains.
Strychnia,	1 grain.
Citric Acid,	5 grains.
Stronger Alcohol,	8 fluid ounces.
Spirit of Orange,	80 minims.
Syrup,	6 fluid ounces.
Pyrophosphate of Iron,	½ troy ounce.
Distilled Water,	7 fluid ounces.
Water of Ammonia,	suff. quantity.

"Triturate the sulphate of quinia, strychnia, and citric acid together, until minutely divided, then add the alcohol and spirit of orange. Warm the syrup slightly (to about 150° F.), and add to the turbid mixture, when, upon stirring, the mixture becomes clear. To this add the pyrophosphate of iron, previously dissolved in the distilled water, and finally, carefully add water of ammonia, drop by drop, until the elixir is perfectly neutral to test-paper; filter. The finished preparation has a greenish-yellow color, a pleasant flavor of orange, and is permanent."

Bitter Wine of Iron.

(James T. Shinn's Formula, slightly modified.)

We have had several years' experience with the following formula, and it has given entire satisfaction to prescriber, dispenser, and consumer.

Take of Sulphate of Cinchonia,	45 grains.
Sulphate of Quinia,	15 grains.
Citric Acid,	60 grains.
Citrate of Iron, *soluble*,	240 grains.
Concentrated Tinct. Fresh Sweet Orange-peel,	8 fluid ounces.
Distilled Water,	8 fluid ounces.
Sherry Wine,	8 fluid ounces.
Syrup,	2 fluid ounces.

Dissolve the sulphates and citric acid in two ounces of the water, and the iron in the remaining ounce of water: mix the two solutions, and add the other ingredients, previously well mixed together.

The only change from the original formula is in the kind and quantity of orange flavor, for which we claim an improvement. See *Proceedings of American Pharmaceutical Association*, 1864, p. 234.

Elixir of Gentian with Iron.

Take of Extract of Gentian,	128 grains.
Citrate of Iron, *soluble*,	128 grains.
Distilled Water,	1 fluid ounce.
Simple Elixir,	15 fluid ounces.

Dissolve the extract and iron in the water, *warmed*, and add the simple elixir: filter.

Elixir of Bromide of Potassium.

Take of Bromide of Potassium,	640 grains.
Red Elixir,	16 fluid ounces.

Mix.

This contains five grains of the salt in each fluidrachm, and is given as a type. The red elixir does not seem to answer for the elixir bromide of calcium; caramel is a more suitable coloring substance for the calcium elixir. We prefer the simple elixir in this case, and to use no coloring substance.

Syrup of Licorice Root.

Take of select Licorice Root in moderately coarse powder,	4 troy ounces.
Diluted Alcohol,	sufficient quantity.
Sugar,	12 troy ounces.

Moisten and pack in a conical percolator; macerate for twelve hours, percolate to exhaustion. Place the tincture over a water-bath until reduced to ten fluid ounces, filter, and then add the sugar; lastly, sufficient distilled water to make sixteen fluid ounces of finished syrup.

The syrup of licorice root, when carefully prepared, is more effectual and more convenient for masking the bitterness of quinia, than is the very popular "compound elixir of taraxacum," and being free from the stimulating influence of alcohol, which is present in the elixir, is well adapted for children. The proper proportions will be one grain of quinia (any salt of it), to the fluidrachm, and if those for whom quinia is ordered, will take the precaution to chew a small quantity of licorice root, previous to taking the quinia mixed with the syrup of licorice, in the proportions here recommended, scarcely any bitterness will be observed. As a matter of course, acids mixed with quinia and licorice syrup, will immediately develop the bitter taste.

It has of late become fashionable to use glycerin as an antiseptic and solvent in elixirs, as well as other compounds of pharmacy, but our aversion to the general use of glycerin for internal administration, for various reasons, has prevented its introduction in our formulas.

The results of our investigations of liquid pepsin preparations, will not warrant the introduction of more than the one formula, which is really a wine of pepsin, and has been found useful in many cases.

REPORT ON THE PROGRESS OF PHARMACY FOR THE YEAR 1871-72.

BY JAMES R. MERCEIN.*

APPARATUS AND PROCESSES.

Decoration of Metals.—A mixture of 3 parts of hyposulphite of soda, and 1 of acetate of lead in solution, is recommended

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* The reader is referred to pages 44 and 45 of this volume, which will explain the reasons why this report is printed in the present, instead of last year's Proceedings. On being notified of the action of the Association, Mr. Mercein communicated the report here printed, and it being found properly arranged and ready for the printer, it was not necessary to transmit it to the reporter on the Progress of Pharmacy to arrange it for publication.—EDITOR.

by Dr. Puscher for decorating metallic surfaces. Heated to 100° Cent., it deposits a layer of sulphide of lead upon them, the color of the metal underneath producing with it various tints. Amer. Journ. Pharm., from Journ. Frank. Inst., Aug. 1871.

Nickel Plating.—The process invented by Isaac Adams, of Boston, and pronounced the best, consists in employing a bath of a perfectly pure double salt of ammonio-chloride or ammonio-sulphate of nickel. Amer. Journ. Pharm., from Journ. Appd. Chem., Oct. 1871.

An Apparatus for Making Simple Syrup by the Cold Process.—An apparatus for making simple syrup by percolation, thereby avoiding the use of heat, is described by Mr. George MacDonald, its originator. It consists mainly of a large keg, with one head removed, and with a false bottom pierced with holes, and placed a few inches above the remaining head. Between the two is inserted a wooden faucet. Three or four folds of fine flannel being laid upon the perforated bottom, the requisite quantity of sugar is placed therein, and water poured on, the whole being allowed to stand for some time. The saturated water collects in the space between the heads, and is drawn off by the faucet in drops. Amer. Journ. Pharm., Nov. 1871.

Portable Medicines.—Prof. Almen, of Upsala, Sweden, is the originator of the method of employing gelatin as a vehicle for portable medicines. Solutions of alkaloids, salts, &c., are added to a concentrated solution of gelatin, which is then spread upon glass plates; the resulting sheet being divided into squares containing the proper dose. Amer. Journ. Pharm., from Med. Press, Nov. 1871.

Platinum Vessels.—Platinum vessels for chemical and pharmaceutical uses are now made from the raw material by Mr. H. M. Raynor. Hitherto the supply has been derived entirely from Europe. Amer. Journ. Pharm., from Journ. Frank. Inst., Nov. 1871.

Nickel Plating.—Prof. F. Stolba has devised a plan for nickel

plating, by means of the action of zinc upon salts of nickel, in the presence of chloride of zinc and the metal to be coated. Amer. Journ. Pharm., from Journ. Frank. Inst., Nov. 1871.

Quantitative Analysis of Citric Acid by Baryta.—J. Creuse proposes a quantitative analysis of citric acid by means of baryta, founding his process on the fact that while the alkaline citrates, the alkaline acetates, and the acetate of baryta are freely soluble in alcohol, sp. grav. 0.805, citrate of baryta is insoluble in that liquid. Amer. Journ. Pharm., Dec. 1871.

Approximate Measurement.—Mr. E. B. Shuttleworth has written a paper on approximate measurement in the Canadian Pharmaceutical Journal, in which he shows the absurdity and danger of ordering powerful medicines by drops, vessels of different sizes and shapes varying the number of drops to the drachm very materially. Tea, dessert, and tablespoonfuls likewise vary extremely, making measurements in this way very inaccurate. Amer. Journ. Pharm., Nov. 1871.

Quantitative Analysis of White Lead ground in Oil.—In view of the fact that ground white lead is so frequently adulterated with the sulphates of baryta, lead, and lime, and with carbonate of lime, Mr. Victor Biart gives a method for a quantitative analysis of the suspected article by which, after the oil is removed by agitation with ether, the residue is dissolved in dilute nitric acid and tested for lime, &c. These tests are given in full in Mr. Biart's paper. Amer. Journ. Pharm., from Leavenworth Journ. Pharm., Oct. 1871.

Apparatus for Vaporizing Camphor.—Mr. John C. Lowd describes an apparatus for vaporizing camphor, by the use of which he claims it will retain its pulverulent form. Amer. Journ. Pharm., March, 1872.

A Method for the Estimation of Morphia in Opium.—Mr. J. T. Miller gives the result of a number of experiments made by him in estimating the quantity of morphia in opium. The liberation of iodic acid from iodine by morphia was made use of in these experiments, and Mr. Miller thinks this mode of

quantitative analysis very accurate. Amer. Journ. Pharm., March, 1872.

A New Method of making Platinum-Black.—A new method of preparing platinum-black is suggested by J. Lawrence Smith. It consists in reducing platin-chloride of potassium by hydrogen, washing out the chlorides of the alkalies with water, and drying the residue at a temperature of 220°. Amer. Journ. Pharm., from Amer. Chem., Feb. 1872.

The Detection of Sulphuric Acid in Vinegar.—According to Mr. James T. King, the five-hundredth part of free sulphuric acid can be detected in vinegar by evaporating one ounce of it to the consistence of a thin extract, and adding to it, when cool, half an ounce of alcohol by trituration. This is filtered, one ounce of distilled water added, the mixture gently heated to expel the alcohol, and again filtered. To the filtrate, acidulated with HCl, a solution of chloride of barium is added; sulphate of barium will be precipitated if sulphuric acid is present. Amer. Journ. Pharm., March, 1872.

American Phosphorus.—At the February meeting of the Philadelphia College of Pharmacy, Professor Bridges exhibited the first stick of phosphorus cast in America, made by Messrs. Rose & Lowell, of Rancocas, New Jersey. It was produced from spent bone-black obtained from sugar refineries, and can be extracted in large quantities. Amer. Journ. Pharm., March, 1872.

Steam Heating Apparatus for the Laboratory.—Prof. E. Parrish describes various apparatus, originally constructed for the purpose of illustrating a lecture, but applicable for practical use in laboratories. The first is a steam-boiler, evaporating-pan, and still-head, made of copper, occupying small space, yet sufficient to meet the wants of most pharmacists. The other apparatus is a "Manipulator" designed to hold a percolator upright while being filled. Am. Journ. Pharm., Jan. 1872.

The Contraction of Alcohol at Low Temperatures.—The amount of diminution and expansion sustained by alcohol at different

temperatures is given in a tabular form by Mr. E. B. Shuttleworth, showing that a fall in temperature from + 60° to — 20°, or 80°, will diminish the volume 0.0480, making the average contraction for each degree about equal to .0006 of the volume. Mr. Shuttleworth suggests that this fact of expansion at higher temperatures and its reverse should be borne in mind when purchasing alcohol in large quantities, for obvious reasons. Am. Journ. Pharm., May, 1872.

SYRUPS.

Syrup of Santonate of Soda.—To make a good vermifuge syrup, according to Mr. J. Dondé, santonate of soda is first prepared by heating 2 ounces santonin, 4 ounces caustic soda lye, and 12 ounces of water in a flask until the santonin is dissolved. The mixture is then transferred to a capsule and evaporated to a pellicle and cooled. To form the syrup, add 30 grains of the santonate of soda dissolved in 1 ounce of water to 18 fluid ounces of simple syrup heated. Each fluid ounce contains one grain of santonin, and the mixture has no bitter taste. Am. Journ. Pharm., Oct. 1871.

Syrup of Senna.—By the use of glycerin and diluted alcohol Mr. J. B. Moore proposes to avoid the fermentation that usually occurs in syrup of senna as ordinarily made. In the article on this subject he gives a working formula for preparing it. Amer. Journ. Pharm., Sept. 1871.

Syrup Assafœtida Compound.—The following formula is strongly recommended by Mr. J. J. Rambo as an excellent one for masking the odor and taste of assafœtida:

℞. Infus. Pruni Virg.,	Oj.
Assafœt.,	℥j.
Sacch. Alb.,	℥xxiv.
Magnes. Carb.,	ʒij.

The gum-resin and magnesia are rubbed into a smooth paste with a small portion of the infusion, the rest gradually added, the mixture filtered, and the sugar dissolved in it by constant agitation. Amer. Journ. Pharm., Sept. 1871.

Syrups.—In an article on Syrups, R. Rother gives a formula for the preparation of a number of them, differing radically from the processes generally used. Pharmacist, March, 1872.

Mrs. Winslow's Soothing Syrup a Poison.—Dr. William F. McNutt, of San Francisco, writing in the Pacific Medical and Surgical Journal, mentions a number of cases that have come under his own observation, where a direct poisonous effect was produced by the so-called Mrs. Winslow's Soothing Syrup. A careful analysis showed the presence of nearly one grain of morphia and other opium alkaloids in every ounce of this nostrum, upon the circular of which is an affidavit, purporting to be sworn to by its proprietors, that it contains *no opiate!* Dr. McNutt quotes from Dr. Murray's paper in the California Medical Gazette to show that there are about 100,000 bottles of the syrup sold in San Francisco annually, containing about 417 ounces of morphia. Upon this basis Dr. McNutt conjectures that there are annually consumed in the United States, 7,500,000 bottles, containing 15,625 ounces of morphia, and costing, at retail, two millions six hundred and twenty-five thousand dollars. Am. Journ. Pharm, May, 1872.

Syrup of Assafœtida.—Prof. J. M. Maisch thinks that syrup assafœtida is best made without heat, by triturating selected tears of the gum with sufficient water, adding a small quantity of orange-flower water and enough sugar to form a syrup, dissolving the latter by repeated agitation. Am. Journ. Pharm., Sept. 1871.

Syrup of Cubebs.—The process of the U. S. P. for making syrups of tolu and ginger has been adopted by Mr. Charles L. Mitchell as a basis for syrup of cubebs, using two ounces of fluid extract in one pint of the syrup, and adding orange-flower-water and oil of almonds to flavor. Two ounces of this syrup, 2 ounces of syrup of wild cherry, and a quarter grain of sulph. morphia form an elegant cough syrup, according to Mr. Mitchell. Am. Journ. Pharm., May 30, 1872.

Syrup of Iodide of Manganese.—Syrup of iodide of manganese is best made, so Mr. J. Creuse thinks, by the direct combi-

nation of pure iodine and peroxide of manganese. In this process, a solution of iodide of iron is first formed as in making syrup iodide of iron; the peroxide of manganese is then gradually added and the mixture heated. Sulphite of soda in solution is then poured in until it ceases to precipitate. The mixture is then filtered and the sugar added. When completed the syrup contains about 7.33 grains of iodide of manganese to each fluidrachm. Am. Journ. Pharm., May, 1872.

EXTRACTS.

Yield.—The percentage of extractive matter obtained from various drugs is shown in the following table :

Extract. Aloes, . .	50 per ct.	Extract. Hellebori Nig., .	25 per ct.
" Cardui Benedicti,	84 "	" Hyoscyami, .	1.5 "
" Cascarillæ, . .	8.5 "	" Ligni Campechiani,	7 "
" Catechu, . .	54 "	" Quassiæ, . .	8 "
" Centaurii Minoris,	25 "	" Myrrhæ, . .	50 "
" Cinch. Calisayæ,	8.5 "	" Opii, . . .	51 "
" " Flav., .	14 "	" Scillæ, . .	68 "
" Colocynthidis, .	82 "	" Pimpinellæ, .	20 "
" Columbo, . .	10 "	" Rad. Glycyrr., .	20 "
" Conii Mac., .	8 "	" Ratanhiæ, . .	12 "
" Dulcamaræ, .	16 "	" Rhei, . . .	88 "
" Ferri Pomatum,.	4.5 "	" Sambuci, . .	8 "
" Gentianæ, . .	27 "	" Secalis Cornuti, .	14 "
" Helenii, . .	81 "	" Sem. Colch. Acid.,	25 "
		" Senegæ, . .	23 "

FLUID EXTRACTS.

Fluid Extract of Chestnut Leaves.—Professor Maisch gives a formula for a fluid extract prepared from the leaves of Castanea vesca, to be used in hooping-cough. The leaves are cut and bruised, exhausted with three successive portions of hot water, the infusions mixed with glycerin and evaporated to a proper consistence, sugar being finally added. Am. Journ. Pharm., Dec. 1871.

Fluid Extract of Vanilla.—Mr. J. B. Moore has devised a process for making fluid extract of vanilla. It consists in digesting the vanilla, reduced to powder with sugar, in a menstruum

of alcohol and water for two hours, at a temperature of 170°. It is then strained, the residue percolated with the remaining menstruum, this percolate being mixed with the product of digestion. Am. Journ. Pharm., Feb. 1872.

LINIMENTS.

Soap Liniment.—By using dry white Castile soap grated, dissolving it by agitation in part of the alcohol, to which the water is afterwards added, mixing with this the camphor and oil of rosemary, dissolved in the rest of the alcohol, and filtering; J. A. Græfle thinks that soap liniment can be better and more readily made than by the officinal method. Am. Journ. Pharm., Feb. 1872.

Liniment of Ammonia.—To overcome the magma-like consistency of the officinal linimentum ammoniæ, R. Rother advises the addition of about one ounce of alcohol to each pint of the liniment. Pharmacist, June, 1872.

In view of the fact that soap liniment, as directed to be made by the U. S. P., is a somewhat troublesome article to prepare, J. C. Wharton suggests a plan by which no heat is required. By triturating the soap in a mortar with the water, then gradually adding the alcohol, and afterwards the camphor and oil of rosemary, rubbing with the pestle until dissolved, and filtering, the process is rapidly finished. Am. Journ. Pharm., Sept. 1872.

MIXTURES.

Solution of Arsenite of Potassa.—Mr. E. Martin thinks that Fowler's solution of arsenic can be made more expeditiously than by the U. S. P. process, by putting 64 grains each of arsenious acid and bicarbonate of potassa, in an ounce test-tube, adding two or three drachms of water and applying heat. When the carbonic acid is driven off, sufficient water is added, with half an ounce of compound spirits of lavender, to make up to a pint. Am. Journ. Pharm., May, 1872.

Chloroform Mixture—Dr. W. Murdock recommends a mixture of two ounces of chloroform and sixteen ounces of glycerin, for administering the anæsthetic. Each drachm contains 17 minims of chloroform. Drug Circ., from Atlanta Med. and Surg. Journ., May, 1872.

Tannin and Glycerin Mixture.—For convenience in dispensing tannin, R. Rother suggests a solution of it in a mixture of glycerin, alcohol, and water; 8 ounces of tannin are added to 8 ounces each of alcohol and water, and heat applied until dissolved; 4 ounces of glycerin are then added, and the mixture is evaporated until it weighs 16 troy ounces, forming a permanent solution. Am. Journ. Pharm., Feb. 1872.

Liquor Plumbi Subacet.—Litharge being generally so impure, R. Rother proposes to make solution of subacetate of lead, by adding freshly precipitated hydrate of lead to a warm solution of acetate of lead, the necessary proportions being given in the article by Mr. Rother. Pharmacist, Dec. 1871.

Diluted Phosphoric Acid.—On account of the use of closed glass vessels in making diluted phosphoric acid, E. B. Shuttleworth considers the process of the U. S. P. preferable to that of the British Pharmacopœia. He thinks, however, that if the nitric acid used has a specific gravity of 1.24 instead of being the weak form ordered in both processes, the time of making will be materially shortened, and with no additional risk of explosions. Canada Pharm. Journ., Aug. 1871.

Emulsio Hydrocyanata.—Professor Oldberg, after stating that very little of the diluted hydrocyanic acid found in stores is of the standard strength, proposes to substitute for it the emulsio hydrocyanata of the Swedish Pharmacopœia, made by adding amygdalin to an emulsion of sweet almonds. New Remedies, from Nat. Med. Journ., Oct. 1871.

Castor-Oil Mixture.—A writer in the Boston Medical and Surgical Journal, recommends a mixture of equal parts of glycerin and castor oil, flavored with oil of cinnamon, as a

complete disguise for the nauseous taste of the oil. New Remedies, Oct. 1871.

Emulsion of Volatile Oils.—Mr. J. Winchell Forbes suggests a plan of preparing emulsions of the lighter volatile oils, by first shaking the oil in a vial, so as to coat the inside with a thin film, then adding one scruple of powdered gum arabic for every ounce of oil used, mixing thoroughly, and lastly adding the water very gradually, forming a perfect emulsion. Am. Journ. Pharm., Feb. 1872.

Chalk Mixture.—Mr. George W. Kennedy proposes to substitute glycerin, in equal amount, for the sugar in chalk mixture, thereby making a more permanent preparation. Am. Journ. Pharm., March, 1872.

MUCILAGES.

Mucilage Acaciæ.—R. Rother has ascertained that glycerin added to mucilaga acaciæ, will effectually prevent its becoming sour. The glycerin, in the proportion of one part in eight of the mucilage, is added to the water, and the gum dissolved in the mixture. Am. Journ. Pharm., March, 1872.

OINTMENTS.

Red Precipitate Ointment.—Emil Martin recommends the following formula for making unguent. hydrarg. oxid. rub., which will retain its original color for years.

℞.—Hydrarg. Oxid. Rub.,	ʒj.
Ol. Ricini,	ʒvj.
Ceræ Alb.,	ʒij —M.

Am. Journ. Pharm., May, 1872.

SUPPOSITORIES.

Preparation of Suppositories.—Robert F. Fairthorne gives a process for making suppositories by first thoroughly cooling the moulds in ice-water, then thinly slicing the proper quantity of butter cacao, and adding to it the medical ingredients by trituration, care being taken if an extract is used, to rub

it to a thin paste with water. The mass is gently melted, and when of cream-like consistency, poured into the moulds and allowed to cool at least fifteen minutes. Made in this way suppositories will keep several months in a cool place. Amer. Journ. Pharm.

Mr. Frank R. Partridge proposes to make suppositories by first powdering the requisite quantity of cacao butter (kept in a cool place) in a wedgewood mortar, adding the medicinal ingredients (extracts being first rubbed with flour of elm), and moulding with the fingers protected by a piece of cotton cloth. Drug. Circ., Sept. 1871.

Assafœtida Suppositories.—Suppositories of assafœtida can best be made, so B. T. Fairchild thinks, by first making an extract from the selected gum by percolation with alcohol and spontaneous evaporation, so that two-thirds of a grain of the extract will represent one grain of pure gum-resin. By the addition of this to cacao butter in the usual way, suppositories can be readily and elegantly made, containing the requisite quantity of the gum. Amer. Journ. Pharm., May, 1872.

FATTY OILS.

Iodo-ferrated Cod-Liver Oil.—What is called iodo-ferrated cod-liver oil can be made, according to Dr. J. Cummiskey, by dissolving 64 grains of iodide of iron in a slight excess of sulphuric ether, and adding to this 1 pint of cod-liver oil gradually, using a large mortar to mix it in. New Remedies, from Phila. Med. Times.

ESSENTIAL OILS.

Adulteration of Oil of Peppermint.—Mr. E. B. Shuttleworth gives the result of an analysis of some suspected oil of peppermint, showing its adulteration with castor oil and alcohol. In 100 parts, 32.72 were found to consist of oil of peppermint, 38.18 of castor oil, and 29.10 of alcohol. Amer. Journ. Pharm., from Canad. Pharm. Journ., April, 1872.

Oil of Sassafras.—Oil of sassafras is made on a large scale at Richmond, Va. Two per cent. of oil is obtained by the

process used, which consists in chopping the root in small pieces, forcing steam through the mass confined in a suitable chamber, and distilling the oil in the usual way. Amer. Journ. Pharm., from Med. and Surg. Reporter, Oct. 1871.

PILLS.

Pill Excipients.—At the December meeting of the Philadelphia College of Pharmacy various excipients for pill masses were discussed. Soluble cream tartar, made by dissolving bitartrate of potash in a solution of borax, and evaporating to a syrupy consistence, mixed with powdered tragacanth, was highly spoken of. A paste of dextrin for making sulph. iron into pills was found useful. Mr. Robert England recommended manna as a good excipient for difficult masses, and Dr. Pile spoke of a mixture of tragacanth and glycerin. Amer. Journ. Pharm., Jan. 1872.

SOAPS.

Silver Soap.—The following formula is given as that used in making silver soap:

℞.—Hard Soap,	8 ounces.
Turpentine,	1½ ounce.
Water,	4 ounces.

Boil until perfect solution ensues, and add liq. ammonia, 3 ounces. New Remedies, from Can. Pharm. Journ., Oct. 1871.

TINCTURES.

Tincture of Aconite and Nux Vomica.—In making tincture of aconite root, R. Rother suggests the use of a menstruum composed of 3 parts of alcohol and 1 of water; for tincture of nux vomica a menstruum of 2 parts alcohol, 1 part of water, with half to one fluidrachm of acetic acid to each pint of mixture. Pharmacist, June, 1872.

Tincture of Opium.—Dr. H. T. Bond proposes to make tincture of opium by triturating the opium in powder with boiling water, adding the alcohol, shaking thoroughly and filtering. The filtrate is then percolated through the dregs left

on the filter, enough water being added to make up the requisite quantity. Amer. Journ. Pharm., Nov. 1871.

MISCELLANEOUS.

Active Principle of Polygonum Hydropiper.—C. J. Rademaker has discovered that the active principle of Polygonum hydropiper is a crystallizable acid. Amer. Journ. Pharm., Nov. 1871.

Carbolic Acid.—Mr. W. C. Bakes has collected statistics concerning carbolic acid and its varied uses, and gives formulas for all the different preparations into whose composition it enters. Amer. Journ. Pharm., Nov. 1871.

Utilization of Residue from Tincture of Myrrh.—E. B. Shuttleworth recommends that the residue left in making tincture of myrrh, consisting chiefly of gum arabic, be dissolved in boiling water, strained and allowed to deposit. The result is a very fair mucilage which can be used as a substitute for ordinary paste by adding a small quantity of molasses. Amer. Journ. Pharm., from Can. Pharm. Journ., Aug. 1871.

Liquid Glues.—By dissolving glue in spirit of nitrous ether to saturation, adding a little India-rubber cut in small pieces, and allowing it to settle for a few days, an excellent liquid glue is formed. Marine glue is made by mixing a solution of 3 parts of shellac in pure ether with a solution of 1 part of caoutchouc in ether. This glue resists the action of hot and cold water, and of most acids and alkalies. A glue prepared from the scales of perch, trout, and bass by long boiling in water, is identical with that made by the natives of the Maldive and Laccadive Islands from the scales of a fish called salt-water trout. It is very transparent and tenacious. Dental Cosmos, Aug. 1872.

Honey of roses as ordinarily made being a very unstable preparation, Mr. E. C. Trembly, in an inaugural essay, gives a formula for making it, which renders it permanent. A fluid extract of red roses is first made by percolation with stronger alcohol, followed by a menstruum of diluted alcohol and glyc-

erin, until by evaporation and the addition of more glycerin, the product weighs 7 troy ounces, representing the strength of 2 ounces of red roses. By adding this to pure honey in the proportion of one part to three of honey, mel rosæ is made, approximating sufficiently to that of the United States Pharmacopœia. Amer. Journ. Pharm., May, 1872.

Petroleum Benzin in making Oleo-Resins.—Professor J. M. Maisch reviews the experiments made by different pharmacists with petroleum benzin as a substitute for alcohol and ether in making oleo-resins, and suggests that an exhaustive analysis should be made to determine whether the proximate principles left untouched by the benzin are medicinally inert. Amer. Journ. Pharm., May, 1872.

Meat, and the Methods of Preserving it.—H. Endemann reviews the various processes for making extract of beef, and believes that from the fact of the albumen being left out by their mode of manufacture they are all deficient in proper nourishment. He therefore suggests a plan by which the fibrin and albumen are retained. The meat cut in slices, is dried in a hot-air chamber at a temperature below 140° Fahr., filtered air being drawn rapidly through the chamber by a suitable apparatus. The dried meat is then ground to a powder. According to Mr. Endemann this product keeps well, and is applicable for every purpose for which the other extracts of beef are used. Am. Journ. Pharm., from Amer. Chemist, March, 1872.

A New Source of Potash Supply.—Mr. Herbert Hazard, in an inaugural essay, gives an analysis of the salts contained in corn-cobs, showing that they yield nearly twice as much carb. potash as the best specimens of wood used ordinarily in producing this alkali. He suggests that as from the annual yield of cobs, say 7,700,000 tons, there could be obtained at least 115,000,000 pounds of carb. potash, this should be looked to as a source of potash supply, especially since the ordinary sources are rapidly failing. Am. Journ. Pharm., April, 1872.

Moisture in Air-dry Drugs.—Mr. George W. Kennedy gives the result of a series of experiments to determine the amount

of moisture contained in so-called air-dry drugs, and shows that they really contained from 8 to 10 per cent. of moisture. He thinks that due allowance should be made for this moisture in preparing syrups, tinctures, &c., in order to obtain the real strength. Am. Journ. Pharm., April, 1872.

Anilin Colors.—Anilin colors are found to be adulterated with sugar crystals; these can be detected, according to W. H. Wahl, by dissolving out the coloring matter with ether or absolute alcohol, leaving the crystals untouched. Am. Journ. Pharm., from Jour. Frank. Inst., March, 1872.

Water-proof Glue.—By adding bichromate of potash to a solution of glue, say one-fiftieth in weight of the glue employed, the glue is rendered insoluble in water. Bichromate of potash is said to render india-rubber unaffected by hot water. Dental Cosmos, from Scien. Amer., Aug. 1871.

Manufacture of Phosphorus.—Prof. Woehler's idea of procuring phosphorus by decomposing phosphates with silicic acid and charcoal is now practiced extensively in France. A furnace like that used in reducing iron, is fed with alternate layers of fuel and phosphates mixed with quartz and soda. The vapor of phosphorus is condensed at the top of the furnace in a suitable apparatus. Am. Journ. Pharm., from Journ. Applied Chem., Oct. 1871.

Water-proof Glue.—Tungstic acid or tungstate of soda, added to glue and followed by muriatic acid, form an elastic compound at 85° to 105° Fahr. When cool the mass becomes solid and brittle. Am. Journ. Pharm., from Manufac. Review, Oct. 1871.

Elixirs and Wines.—In a paper read before the Louisville College of Pharmacy, January 16th, 1872, Prof. C. Lewis Diehl gives an exhaustive account of the various elixirs and wines so often called for, and offers reliable formulas for their preparation. His process differs from that of others in the fact of his first preparing a "simple elixir" and a "wine of orange," which are used as the base in making the different wines and elixirs, the medicinal ingredients being added in

proper proportion. Mr. Diehl suggests the use of Baker's cocoa in these preparations, about one ounce to each gallon; it not only gives a good color, but acts as a capital mask for concealing the taste of the alkaline and ferruginous salts. Pharmacist, April, 1872.

Elixirs containing Pepsin.—Prof. C. Lewis Diehl quotes from E. Scheffer's article on pepsin and its compounds (Am. Journ. Pharm., vol. xliv, p. 52), to show that as the presence of an acid in solutions of pepsin is necessary to produce its peculiar digestive effect, and that as the addition of an acid to a solution of ammonio-citrate of bismuth precipitates this salt, it will be impossible to combine pepsin and bismuth in the form of an elixir, especially since the 20 or 25 per cent. of alcohol present in all elixirs will effectually destroy the peculiar action of the pepsin. Pharmacist, May, 1872.

Phosphorus Paste.—An improved formula for making phosphorus rat paste or poison is suggested by R. Rother. It is so manipulated that the phosphorus is not brought in contact with the air, thereby avoiding any danger of ignition. Pharmacist, June, 1872.

Litmus-Paper as a Reagent.—Mr. Charles Bullock gives the result of a series of experiments to determine what amount of acids or alkalies is necessary to show a distinct shade of color in litmus-paper. Am. Journ. Pharm., Jan. 1872.

Sulphurous Acid.—In view of the fact that the action of sulphurous acid upon phosphates transforms them into soluble modifications by the production of double salts, Mr. B. W. Garland suggests that this process can be used advantageously in treating bones, &c., for making various fertilizers, and thinks that the new salt of phosphate and sulphite of lime might be used in hospitals as a disinfectant. Am. Journ. Pharm., Jan. 1872.

Glycerin in Putrid Sore Throat.—Dr. J. Dabney Palmer cites a case of putrid sore throat in a child that was cured by the use of glycerin in teaspoonful doses repeated every six hours. Am. Journ. Pharm. Nov. 1871.

Purification of Muddy Water.—By boiling muddy water with carbonate of magnesia, about a tablespoonful to each gallon of water, and filtering while *hot*, Mr. H. M. Wilder thinks it can be used to advantage in most cases in place of distilled water. Am. Journ. Pharm., Sept. 1871.

The Color of Fluorescent Solutions.—A number of careful experiments has convinced Mr. Henry Morton, of the Stevens Institute of Technology, that all the familiar fluorescent solutions, such as tincture of turmeric, of agaric, of chlorophyll, &c., emit light of the same color, namely, blue, identical with that developed by acid salts of quinia. He observes also that while the acid salts of quinia generally are fluorescent, the chloride is not, and that hydrochloric acid will decompose the acid sulphates so as to destroy their fluorescence. Am. Journ. Pharm., from Amer. Journ. Science and Arts, Sept. 1871.

Theina from Coffee.—An economical and easy way of obtaining theina from coffee is described by Mr. Charles Fredigke in the Pharmacist for August. It consists of a Linden's patent coffee-roaster, in which the berries are torrified, and the vapor condensed by a suitable tube. The deposit in the receiving-flask is dissolved in water, filtered, evaporated, and dried carbonate of potash added. The mixture is set aside, to allow the theina to form. The supernatant liquid is decanted, the deposit redissolved, evaporated to dryness, and finally crystallized from a boiling solution in alcohol. Two pounds of Rio coffee yielded 104 grains of theina. Amer. Journ. Pharm., Sept. 1871.

Bromide of Calcium.—Bromide of calcium can be readily made, according to James R. Mercein, by first preparing a strong solution of hydrobromic acid, spec. grav. 13°, saturating this with precipitated carbonate of lime, heating the mixture, filtering out the undissolved carbonate of lime, and evaporating to a granular form. This process yields an almost pure salt, readily soluble in twice its weight of water. Amer. Journ. Pharm., March, 1872.

The Ownership in Physicians' Prescriptions.—The ownership in physicians' prescriptions has been discussed by the doctors of Denver, Colorado, with the result of their sending to each druggist in the town a copy of the following circular:

"DENVER, COLORADO, August 1st, 1871.

"TO THE DRUGGISTS OF DENVER.

"GENTLEMEN: In view of the fact that the physician is the proper person, and the only one competent, to decide whether a prescription once made to a patient should be repeated and continued: *And whereas*, numerous accidents have occurred by druggists repeating the preparation of prescriptions in cases where they have not, and are not expected to have, any knowledge of the disease: *And whereas*, the American Medical Association, and the medical associations of many of the States, have found it necessary to condemn the practice; *therefore, be it resolved*, that we will hereafter withhold our patronage from druggists who repeat the preparations of a prescription without the written order of a physician."

Drug. Circ., Sept. 1871.

Adulteration of Lard.—A frequent adulteration of lard is milk of lime, from two to five per cent. being added. This forms a saponaceous compound, pearly white, and allowing twenty-five per cent. of water to be added to it. Canada Pharm. Journ., Oct. 1871.

Tolerance of Chloroform.—Dr. E. R. Squibb, in the New York Medical Journal, gives an instance of a lady, who, in the course of five and a half months, took 53 pounds of purified chloroform. During the acute attacks of hereditary migratory gout, the patient not unfrequently took two pounds daily. Drug. Circ., Oct. 1871.

Bismuth in Texas.—Veins of bismuth have been discovered in Archer County, Texas. Its gangue is quartz, through which it is disseminated in small metallic veins. Drug. Circ., Nov. 1871.

Professional Courtesy of the Philadelphia College of Pharmacy.—The great fire in Chicago having necessarily interrupted the lectures of the Chicago College of Pharmacy, the authorities of the Philadelphia College of Pharmacy gave notice that all matriculants of the Chicago College, for the session of

1871–2, were invited to pursue their studies at the Philadelphia College free of all expense.* Drug. Circ., Jan. 1872.

Anilin Dyes.—In an article on Anilin Dyes, Mr. E. B. Shuttleworth gives a practical plan for dyeing with the different anilin colors, together with the necessary directions for mordants, &c. Drug. Circ., from Canad. Pharm. Journ., Feb. 1872.

Tasteless Compounds of Iodide of Iron.—J. A. Creuse, of Brooklyn, N. Y., has obtained a patent for a process by which the compounds of iodide of iron are deprived of their disagreeable inky taste. The process consists in mixing the sesquioxide of iron with various salts, such as citrates, tartrates, and oxalates of potash, soda, ammonia, or lithia. The solutions of the iodide of iron thus obtained, are protected from change, either alcohol, 16 per cent., or enough sugar to make an officinal syrup. Drug. Circ., April, 1872.

Solidified Glycerin.—A writer in the Druggists' Circular offers the following formula for solidified glycerin, or glycerin jelly, as a substitute for cerates and creams:

Transparent Soap, ...	1 ounce.	
Water, ...	4 ounces.	
Glycerin, ...	4 "	(all by weight).

The soap is dissolved in the water, mixed with an equal weight of glycerin, by a water-bath. To this is added the rest of the glycerin, with enough water to make up the original weight. When nearly cool the perfume is added, and the mixture poured into glass jars. Drug. Circ., Jan. 1872.

Inflammable Oils and Dangerous Burning Fluids.—Dr. A. E. Foote, of the Iowa State Agricultural College, in an article on inflammable oils and dangerous burning fluids, after describing the process of distilling off the various products of petroleum, and the order in which they pass over, details a number of experiments made with so-called safety oils, and shows them to be just the contrary, the base of all being kerosene, mixed with a greater or less percentage of benzin or

* Other colleges made similar offers.—EDITOR.

naphtha. Dr. Foote gives a simple test for ascertaining whether kerosene or other burning fluid is of standard density, which is 110 per cent. by the United States law. Half fill a bowl with boiling water, immerse in this the bulb of a thermometer, and pour in cold water until the mercury stands at 110°. Cover the surface of the water with the fluid to be tested, and apply a match; if the fluid burns it is rejected as dangerous. Drug. Circ., Jan. 1872.

Tin in Utah.—Tin has been discovered in Utah in large quantities, and its veins will be vigorously worked. Drug. Circ., from Scientific Press, Jan. 1872.

The Tallow Tree and its Products.—Dr. D. J. Macgowan gives an account of the tallow tree (Stillingia sebifera), its habitat, mode of cultivation, and the uses to which its products are put. He explains the manner in which the tallow, consisting of almost pure stearin, is obtained, as well as the oil. Amer. Journ. Pharm., from Scien. Amer., June, 1872.

Analysis of Commercial Iodine.—Commercial iodine can be analyzed, according to Prof. J. A. Wanklyn, by dissolving a known weight of the metal in a solution of sulphurous acid, and precipitating it therefrom by means of a solution of nitrate of silver in presence of an excess of ammonia, to prevent chloride of silver from being thrown down. The details of this process are given by Prof. Wanklyn. Amer. Journ. Pharm., from Amer. Chemist, June, 1872.

Cantharidal Plaster.—If finely powdered cantharides are heated in a water-bath for thirty minutes with diluted alkaline lye of 1.1 specific gravity, and muriatic acid in slight excess added, they will yield their catharidin much more readily in making the cerate. The mass, after the alkaline and acid treatment, is dried rapidly in the water-bath, powdered anew, and used as in the officinal formula. Professor G. Dragendorff is the authority for the foregoing. Amer. Journ. Pharm., from Pharmacist, June, 1872.

A New Use for Paraffin.—Dr. Vohl announces that paraffin mixed with benzole or Canada balsam is a much better glaz-

ing for frescoes than soluble glass. A thin film of paraffin spread on the interior of wine casks effectually prevents the spoiling of wine or its evaporation. Amer. Journ. Pharm., from Journ. Frank. Inst., June, 1872.

Protection against Accidental Poisoning.—The American Medical Association, at its last annual meeting, adopted the following resolution relative to safeguards against accidental poisoning. "*Resolved*, That it is recommended to all druggists, to place all external remedies in bottles, not only colored, so as to appeal to the eye, but also rough on one side, so that by the sense of touch, no mistake be possible, even in the dark; and that all bottles containing poisons should not only be labelled 'Poison,' but also with another label indicating the most efficient and convenient antidote." Amer. Journ. Pharm., June, 1872.

Detection of Turmeric in Rhubarb and Mustard.—Professor Maisch describes a test for the detection of turmeric in powdered rhubarb and yellow mustard, based on the liberation of boracic acid, which imparts to curcumin a color like that produced by alkalies, while all the soluble principles of rhubarb yield pale yellow solutions in acid liquids. Amer. Journ. Pharm., 1871, p. 259.

Pumpkin.—Dr. J. V. C. Smith reports that pumpkin-seeds are freely used in Syria and other parts of the East as an anthelmintic. New Remedies, from Drug. Circ., Jan. 1872.

Freezing-Point of Glycerin and Water Mixtures.—The freezing-point of different mixtures of glycerin and water, is shown in the following table compiled by C. Bullock, the glycerin used being the common article, specific gravity 1.250:

1 gallon	of water	with	8 ounces	glycerin	freezes at	30° F.
1	"	"	16	"	"	24° F.
1	"	"	24	"	"	18° F.
1	"	"	32	"	"	10° F.
1	"	"	48	"	"	8° F.

Amer. Journ. Pharm., 1871, p. 137.

Styptic Cotton.—By boiling cotton in a weak solution of soda (4 per cent.), for an hour, washing and drying and steep-

ing it in liquor ferri sulphatis (diluted one-third), and drying it again, the best styptic cotton can be made. This is a modification of Dr. Ehrle's formula by Dr. James Cummiskey. New Remedies, from Amer. Chemist, Oct. 1871.

New Pharaoh's Serpents.—The toys called Pharaoh's serpents can be made without the noxious fumes accompanying sulphocyanide of mercury by mixing intimately 2 parts of chromate of potash, 1 of nitrate of potash, and 3 of white loaf sugar, a small quantity of balsam Peru being added to give a pleasant odor. This mixture is moulded into pastilles of suitable size, and kept from the light until needed. New Remedies, from Amer. Chem., Oct. 1871.

Soluble Hypophosphite of Iron.—Soluble hypophosphite of iron may be readily made by the following formula of Robert F. Fairthorne.

℞.	Ferri Hypophos., ...	℥vj.
	Acidi Citrici, ...	℥iv and ℈ij.
	Liq. Ammon. Fort., ...	q. s. ad sat.

Saturate the powdered citric acid with liq. ammon. fort. Mix the hypophosphite of iron with this in a flask, and add ammonia until neutral to test-paper. Evaporate in a capsule to a syrupy consistence, and cool. This contains 50 per cent. of the common hypophosphite of iron, and is very soluble in water. Amer. Journ. Pharm., Sept. 1871.

Preparation of Gun-cotton.—Gun-cotton is now made in England by the ton by reducing the cotton fibre to a pulp, as in paper making, so that the excess of acids is readily removed. It is then made into disks by strong pressure. Am. Journ. Pharm., Sept. 1871.

Notes on Chloral.—Mr. Robert F. Fairthorne describes the different forms of commercial chloral, and gives the result of a number of experiments with different reagents as possible tests for this chemical. He finds that it is readily soluble in alcohol, ether, oil of turpentine, benzole, bisulphide of carbon, and the fixed oils. Equal parts of camphor and hydrate of chloral, shaken together, become a clear fluid. Dr. Rademaker has

also made a chemical examination of German chloral, namely, Liebreich's, Schering's, and De Haen's, and asserts that, by decomposing each with caustic alkali, their yield of chloroform is as follows:

100 grains of	Liebreich's	produced	60	grains chloroform.
"	Schering's	"	60	"
"	De Haen's	"	50	"

Am. Journ. Pharm., Sept. 1871.

A New Method of Preparing Pepsin.—Mr. E. Scheffer gives a new-method of preparing pepsin, based on the action of saturated solutions of some of the neutral alkaline salts on different protein substances. His process consists in removing the mucous membrane from the fresh stomach of the hog, chopping finely, and macerating in water acidulated with muriatic acid for several days. The liquid is strained and set aside for a day to settle. An equal bulk of a saturated solution of chloride of sodium is added and thoroughly mixed. At the end of a few hours the pepsin floats on the surface, is removed with a spoon, and put upon muslin to drain, and then submitted to powerful pressure. To make saccharated pepsin, the damp pepsin, as taken from the press, is triturated with a certain quantity of sugar of milk, dried, and the amount of pepsin present discovered by deducting the weight of sugar of milk. Its strength is then ascertained by digestion with coagulated albumen, at a temperature of 100° F. for several hours, and sufficient sugar of milk is added, so that 10 grains of the saccharated pepsin will dissolve 120 grains of coagulated albumen. Mr. Scheffer asserts that 1 *grain* of purified pepsin in 4 ounces of acidulated water (6 drops of muriatic acid to each fluid ounce of water) will dissolve 400 grains of albumen in eighteen hours at 75° F. One grain of purified pepsin in 4 ounces of acidulated water dissolves 500 grains of coagulated albumen in 6 hours at 105° F., and 10 grains saccharated pepsin dissolves 120 grains of coagulated albumen in four to six hours at 100° F. By adding successive portions of coagulated albumen and acidulated water to a *half grain* of pepsin, Mr. Scheffer has succeeded in dissolving 1500

grains of coagulated albumen! Solutions of pepsin do not keep well, but liquid pepsin (see Am. Journ. Pharm., Jan. 1871) containing glycerin remains unaltered for eight or nine months. As to its action towards milk, Mr. Scheffer says that 5 grains of saccharated pepsin, swelled in a little water, coagulated one pint of milk in thirty minutes. One part of purified pepsin will coagulate 80,000 parts of milk. Careful experiments prove that alcohol impairs the action of pepsin, and that, therefore, the various "wines" and "elixirs" are the poorest vehicles for administering it in. Am. Journ. Pharm., Feb. 1872.

Citrate of Iron and Bismuth.—A formula for preparing citrate of iron and bismuth in solution, either with water or with sherry wine, is given by Mr. Charles Rice. Am. Journ. Pharm., May, 1872.

Iodide and Bromide of Potassium.—Mr. Charles D. Chase calls attention to the fact, that most of the iodide and bromide of potash found in use is alkaline instead of neutral in their reactions, and that in consequence of this, when prescribed in connection with salts of morphia, the morphia base is separated and rises to the surface of the mixture. Hence, the dangerous liability of the patient getting all the morphia in the first dose. Mr. Chase recommends that when prescribed together, that the potash salt be first dissolved, tested with turmeric or red litmus-paper, and if alkaline, neutralized with diluted muriatic acid before adding the morphia salt. Am. Journ. Pharm., May, 1872.

New Process for Detecting Bromide in Iodide of Potassium.—Mr. Edmund Van Melckebeke takes advantage of the property possessed by a saturated solution of one salt to dissolve another salt, provided the two salts do not produce a precipitate with each other, and proposes to use this fact as a test for the presence of bromide in iodide of potassium. A saturated solution of bromide of potassium is made with warm water, allowed to cool, and decanted after crystallization. To 10 c. c. of this solution ten drops of distilled water are added in a test-

tube, and afterwards in small quantities, with repeated agitation, one gramme of the suspected iodide in coarse powder. If free from bromide it will dissolve almost instantly, while this impurity, if present, will remain undissolved. Am. Journ. Pharm., June, 1872.

Monobromated Camphor.—Prof. W. A. Hammond has administered monobromated camphor in various cases of convulsions from teething, hysteria, and headache, and with uniform success. He infers that it would be useful in delirium tremens, in doses of 5 grains every hour, or half hour, until sleep is produced. Amer. Journ. Pharm., from N. Y. Med. Journal, June, 1872.

Disinfectants.—A commission appointed by the French Academy to investigate the relative merits of various disinfectants, report that hypo-nitrous acid ranks first, and carbolic acid second. Directions for making and using the dangerous gas of the hypo-nitrous acid are given in the report. Amer. Journ. Pharm., from Scien. Amer., June, 1872.

Gun-Cotton and its Preparations.—In an inaugural essay on Gun-Cotton, Mr. Charles L. Mitchell gives a formula for making it, claiming a superiority over that of the United States Pharmacopœia, on account of its cheapness, solubility, and ease of making. The cotton is freed from all greasy matter by being boiled with carbonate of potash for some hours, thoroughly washed and dried, and then immersed in a mixture of equal quantities of nitric and sulphuric acids, and allowed to stand in a cool place for four days. It is next washed, first in warm, and then in cold water, until free from the acids, and lastly dried. Mr. Mitchell gives formulas for various preparations that can be made from this gun-cotton, in the shape of styptics, anodynes, antiseptics, stimulants, and vesicants. Amer. Journ. Pharm., June, 1872.

American Asphaltum.—Prof. J. S. Newberry is confident that all asphaltes are more or less perfectly solidified residual products of the spontaneous evaporation of petroleum. He gives a list of the principal sources from which it is ob-

tained, ranging from Canada to Colorado and California. In Southern California especially, it is very abundant. In view of the increasing demand for asphaltum for roofing, paving, &c., Prof. Newberry thinks that a systematic development of these sources of supply should be begun. Amer. Journ. Pharm., from Amer. Chem., July, 1872.

The Saltpetre Deposits in South America.—In the Scientific American for April an account is given of the saltpetre deposits in the Pampa of Tamanigal and Bolivia. The salt is found in different strata. At a depth of eight or ten inches from the surface it is found in very regular prisms, sparkling with very small microscopic crystals; below this the stratum consists principally of chloride of sodium, chlorate of potash and soda saltpetre mixed with earth, and pieces of silicates and carbonates. Beneath this crust is found the pure soda saltpetre, in more or less perfect crystals, from 20 to 40 inches long, and 3 to 7 feet in diameter. The manner of mining it, &c., is described at length by the writer. Amer. Journ. Pharm., July, 1872.

A Delicate Test for Phenol.—By the use of bromine-water as a reagent, Landolt has detected phenol in 47,000 parts of water. An immediate bulky precipitate of tribromo-phenol is found, when an excess of bromine-water is added. Amer. Journ. Pharm., from Amer. Journ. Sci. and Arts, July, 1872.

Hydrofluoric Acid.—In making hydrofluoric acid, the tendency of the sulphuric acid and fluor-spar to form a hard compound in the retort can be avoided by mixing with the spar an equal weight of gypsum, and the proper quantity of sulphuric acid. The residue is easily removed by water. Amer. Journ. Pharm., from Sci. Amer., July, 1872.

Bromine in Analytical Chemistry.—In an article translated by P. Schweizer, Ph.D., from Fresenius's Zeitschrift, Mr. P. Waage recommends bromine as an excellent oxidizing agent in both qualitative and quantitative analyses, preferring it to nitric acid, chlorate of potassa, and hydrochloric acid and chlorine. He uses it either as free bromine, as bromine-water,

and dissolved in concentrated hydrochloric acid, giving examples of the fitness of each form for the analysis of certain chemicals. Amer. Journ. Pharm., from Amer. Chem., Oct. 1871.

REPORT ON THE PROGRESS OF PHARMACY FOR THE YEAR 1872-73.

BY PROFESSOR C. LEWIS DIEHL.

This report is divided into the following six parts:

I. Pharmacy.
II. Materia Medica.
III. Inorganic Chemistry.
IV. Organic Chemistry.
V. Necrology.
VI. Bibliography.

I. PHARMACY.

APPARATUS, ETC.

Automatic Apparatus for the Evaporation of Liquids to a given Weight.—S. Zavaglia has constructed an apparatus, by means of which any quantity of a liquid may be evaporated to the weight desired. The apparatus consists in principle of a lever, which on the one hand rests upon a balance, and on the other carries a contrivance, the sinking of which intercepts the flow of gas furnishing the flame. The lamp and vessel are balanced upon a counter scale, the weight desired to be evaporated is placed upon the scale-pan supporting the evaporating vessel, and the lever is adjusted. As soon as the requisite weight of liquid has evaporated, the equilibrium is restored and the flow of gas is suspended. N. Jahrb. f. Pharm., March, 1873, p. 184, from Ber. d. d. Ch. Gesel.

A New Filtering Medium is found by R. Rother in the so-called "iron cuts." See Pharm. and Chem. Rec., Sept. 1872, p. 223.

Glass Filters.—The extraordinary degree of fineness in which glass threads can be obtained, has induced P. Weiskopf, of Morchenstern, Bohemia, to reduce glass to the condition of felt, and he has succeeded to so reduce it without difficulty, and has used it in place of asbestos for filter. Such filters furnish a clear filtrate with extraordinary rapidity. The new filtering medium is about to be introduced into commerce by Mr. Weiskopf, and will doubtless be a valuable acquisition to the chemist's laboratory. Apoth. Zeitung, 1872, No. 50.

In connection with this, it is of interest that Mr. Coleman Sellers announced, at a recent sitting of the Franklin Institute, that glass may be obtained in a condition resembling cotton, when a current of steam is passed through melted glass. Samples of glass so prepared were exhibited. Dingler's Polytechn. Journ., 1872, from Journ. of Franklin Institute.

An improved Gas-burner has been constructed by J. W. Cremin. The gas circulates in a hot metallic vessel under the burner, and is there heated, whereby its illuminating power may be increased about 60 per cent. Am. Journ. Pharm., 1872, p. 393, from Chem. Centralbl., 1872.

A Blowpipe worked by water is described and illustrated in Am. Journ. Pharm., 1872, p. 451 (from Zeitschr. f. Anal. Chem.), the construction and principle of which seem admirably adapted for laboratory use.

Drum Sieves.—Dr. L. Euden recommends the use of parchment-paper, instead of the expensive parchment, in constructing drum sieves, and finds them to be just as durable. A circular piece of the strongest, smoothest parchment-paper, the radius of which is 1 to 2 inches larger than that of the sieve, is plunged into water, smoothed perfectly upon a previously moistened table, and the excess of water is carefully wiped off; it is then coated with a thick solution of gum, and covered with a piece of white writing- or filtering-paper,

which must also be smoothed as perfectly as possible, this is again coated with gum, and covered with a disk of parchment, prepared like the first; the whole is then smoothed as much as possible with the hands, and after again wiping off the excess of water, it is fastened to the sieve by coating the outer surface of the frame, and the inner surface of the hoop with glue, drawing the hoop over the prepared parchment and frame, and allowing to become dry at the ordinary temperature. Arch. d. Pharm., July, 1872, p. 58.

Tube Hydrometers.—Dr. Wilson H. Pile draws attention to a new application of his tube hydrometer, described in a paper read before the Am. Pharm. Assoc. in 1870, and which is virtually a Baumé's hydrometer for liquids heavier than water, made from a straight glass tube, with its lower end closed. The new application consists in so preparing the tube that the specific gravity of the liquid under examination may be ascertained by pouring it into the tube, instead of immersing it into the liquid. By this means, light as well as heavy liquids may be examined by the instrument, which presents the further advantage in enabling the determination of the specific gravity of very small quantities or very heavy liquids, to which ordinary hydrometers could not be applied. The instrument for *heavy* liquids is prepared by immersing the tube in water of 60° F., and pouring in water until it sinks about two-thirds of its length; a mark is then made at the point to which it sinks, and at the point to which the water fills the tube. The space below the latter mark is then divided into 145 equal parts, which are marked or etched upon the glass, when the hydrometer is ready for use. The specific gravity of a heavy liquid is then ascertained by immersing the tube in water, and pouring in of the liquid, until the instrument sinks to the mark first made on the tube; the degree is then read off at the point to which the tube is filled. For light liquids, the part below the point, to which the tube was originally filled with water, is divided into 140 parts, and the part above is marked with corresponding divisions to any number desired, beginning with the number 10 to make the

instrument correspond to Baumé's scale. Am. Journ. Pharm., 1872, p. 481.

Vessels for the Preservation of Chemicals.—Kœnig recommends earthenware vessels, constructed with a good groove at the top, which is kept filled with castor oil, and into which the lid dips. The air is thus excluded completely, and the author has found it of great advantage to conserve chemicals that are readily decomposed when exposed to air. Chlorinated lime had been kept for two years, and was perfectly preserved. Pharm. Centralhalle, 1873, No. 8.

Dispensing Vessel for Mercury.—Ludwig Leiner recommends, as the simplest contrivance for dispensing mercury, a small strong wide-mouthed vial, arranged by means of glass and rubber tubes, precisely like a spritz (wash) bottle. The tube for blowing in the air should be tolerably large, and consists of two short glass tubes, connected by an india-rubber tube. The tube dipping into the mercury is drawn to a fine point. Arch. f. Pharm., Jan. 1873, p. 18.

Silvering Glass Vessels.—R. Siemens recommends the use of aldehyde-ammonia, prepared by passing dry ammonia into aldehyde, as a reducing agent for silver, in silvering glass vessels; 4.0 grammes of nitrate of silver, and 2.5 grammes of aldehyde-ammonia, are dissolved separately in distilled water, sufficient to measure 1 litre, and the mixed solution is filtered. The vessel, after it has been thoroughly cleansed with solution of carbonate of potassium, followed by alcohol, and finally by distilled water, is filled with the solution to the point desired, is introduced into a water-bath and heated gradually. At 50° C. (=122° F.) the silver begins to deposit, and at 55° C. (=131° F.) to 60° C. (=140° F.) the process is ended, when the vessel must be immediately removed from the water-bath and the contents emptied, as otherwise the purity of the silver surface is endangered. A beautiful surface of silver is thus obtained. Pharm. Centralhalle, 1872, No. 31.

CAUTERIES.

A new Cautery, recommended by B. Straus, consists in the

application of butter of antimony with a pencil to the surface to be cauterized, followed rapidly by the application of lunar caustic. The action depends upon the slow formation of nitro-muriatic acid, formed by the free muriatic acid contained in the butter of antimony, and the nitric acid liberated by double decomposition. N. Rep. f. Pharm., 1872, p. 331; Pharm. Centralhalle, 1872, No. 35.

CERATES AND OINTMENTS.

Ointments made with ceresin instead of wax have been made by Von Samphir, and have been found remarkably satisfactory in every respect.

Simple Ointment is made in the proportion of 1 part of ceresin to 4 parts of lard.

Emollient Ointment, 8 parts oil of benne, 2 parts spermaceti, and 1 part ceresin.

Spermaceti Cerate, equal parts of spermaceti, oil and ceresin. Zeitschr. d. Œst. Apoth. Ver., 1872, No. 24.

Mercurial Ointment.—It is variously stated, that the reduction of mercury is most rapid and effectual, if it is first triturated with a small quantity of plasma (glycerinum amyli), and the fats are afterward added gradually. The only application in which this deviation would interfere is in the admixture with iodine, a change of color resulting. Pharm. Zeitschr. f. Russ., 1872, No. 14.

Hager recommends the following process for preparing mercurial ointment rapidly and perfectly: Agitate together 60 grammes of distilled mercury, 10 grammes of old mercurial ointment, and 1 gramme of chloroform, for several minutes; then add 40 grammes yolk of egg, and 80 grammes semiliquefied lard, and mix. The extinction of the mercury is perfect and exceedingly uniform, the division after a few minutes' shaking being so minute, as to require a lens of 100 diameters to render the individual globules visible, and these are all nearly of the same size. Pharm. Centralhalle, 1872, No. 37.

Ung. Hydrarg. Oxid. Rub.—Mr. Julius Kalish finds that

an ointment, prepared with one part of wax and three parts of castor oil, will serve as an excellent body for ointment of red oxide of mercury, an ointment prepared with it having kept for over six months perfectly. The objection to it is the odor, and the irritating properties of the castor oil, when applied to delicate parts. Olive oil does not seem to answer as a substitute for castor oil; but an ointment made with oil of sweet almonds has kept well for ten weeks. Am. Journ. Pharm., Feb. 1873, p. 69.

Ung. Ophthalmicum Rubrum.—According to Ullersperger, unsalted butter is the best excipient for red oxide of mercury for eye-salves. The butter for this purpose is mixed with pure hot water in a glass vessel, the oily fat separating is removed, and mixed with one-fourth its weight of melted white wax. The ointment must be made extempore. Apothek. Zeit., 1872, No. 31.

Ointment of Oxide of Zinc.—Mr. Alfred H. Bolton, having experienced great difficulty in making a smooth ointment according to the Pharmacopœia formula, has been induced to try a paint mill for the purpose, and found it to answer the purpose admirably. The ingredients are previously mixed, warmed, are benzoated, in the proportion of four fluidrachms of tincture to a troy pound of the ointment, and are then passed through a warmed mill, regulating the latter by the use of a thumb-screw attached, and keeping it warm in cold weather by means of a spirit-lamp. For those who prepare large quantities of the ointment, the author considers the price of the mill no objection. Am. Journ. Pharm., Jan. 1873, p. 4.

Julius Kalish obtains a perfectly smooth oxide of zinc ointment by triturating the oxide of zinc first with a small quantity of oil of sweet almonds to form a smooth paste, then gradually adding the lard. Am. Journ. Pharm., Feb. 1873, p. 68.

(The suggestion is a good one; your reporter having practiced the same method for several years. In view of the con-

sistence becoming softer by the use of oil (olive oil will answer as well), one-half the lard necessary was replaced by simple ointment. C. L. D.)

Ointment of Black Oxide of Copper is proposed as an application to corns once a day, after paring them thoroughly. It is prepared in the proportion of 15 grains of the oxide to ½ ounce of lard. Am. Drug. Circ., Oct. 1872, p. 173.

Ointment of Oleate of Lead is recommended to be prepared, by Mr. Alfred W. Gerrard, from 20 per cent. oleate of lead (see Oleate of Lead in this report), by mixing 2 parts with 1 part each of oil of almonds and prepared lard, by the aid of gentle heat. On cooling, an elegant ointment resembling spermaceti ointment is formed.

An Ointment of Oleate of Zinc is prepared by the author, from 20 per cent. oleate of zinc, in the same manner and proportion. It forms an ointment of the ordinary consistence. Am. Journ. Pharm., 1872, p. 462.

COLLODIONS.

Collodion.—Kleffel has discovered a new property of collodion, which is likely to lead to some useful application. If a glass plate is covered with collodion, and, after this has become solid, a printed paper is pressed upon it with the hand, an impression of the letters is left upon the collodion film, remaining discernible after the complete drying of the latter.

Mercurial Collodion is prepared by Leclerc by dissolving 0.50 grammes corrosive sublimate in 15.00 grammes collodion. It is used by the author with success to remove syphilitic blotches, applying it with a pencil. Five days' application removes all traces, and the application causes but slight itching. Apoth. Zeit., 1873, No. 1.

Collodion colored with Anilin.—According to Ferd. Springmühl, collodion may be colored with nearly all the anilin colors that are soluble in alcohol, and such colored collodion finds various technical applications. Picric acid and some of the anilin browns will not answer. The process for impart-

ing the color to the collodion consists in making a thick, syrupy solution of gun-cotton in a mixture of two measures of ether and one measure of alcohol, of 95 per cent., diluting to the desired consistence with more ether, dissolving the anilin in one-half as much alcohol as the additional volume of ether used for dilution, and mixing with the collodion. Chem. Centralbl., 1872, No. 32.

DISTILLED AND MEDICATED WATERS.

Medicated Waters.—F. W. Reinhold, Jr., argues that preparation of medicated waters by distillation is by no means a sufficiently important object to warrant the increased trouble to the pharmacist and consequent expense to the consumer. He states that, provided pure essential oils are used, water may be impregnated with the essential oil just as effectually by maceration as by distillation, and so proposes them to be made. Camphor-water may be readily made of full strength by agitating the fine powder with the water; the camphor need not be powdered by the aid of alcohol, water answering the same purpose. Pharm. and Chem. Rec., May, 1873, p. 142.

Distilled Waters.—From the observations of Vuaflart and of Machet it would appear that rose water and orange-flower water do not keep as well when distilled by steam as when they are distilled over the naked fire. Prepared by the latter plan, orange-flower water will keep for years; at first it has a peculiar empyreumatic odor, which, however, it loses after the first frost. The Arabs, according to Roucher, use great care in preparing this water, which, after several cohobations over the naked fire, is saturated, strongly aromatic, and keeps well. Am. Journ. Pharm., 1872, p. 426, from Proc. of the Pharm. Soc. of Paris.

Aqua Amygdal. Amar., Ph. Germ.—The bitter almond water of the German Pharmacopœia is of such strength that, according to the experiments of J. B. Oster, 4 cc. will exactly suffice to decolorize 1 cc. of one-tenth normal solution of ammoniated copper (Mohr). This fact suggests itself to the author as a convenient method of determining its strength.

Bitter almond water is often turbid from finely divided almond parts carried over by spurting. This turbidity is readily removed by adding dilute sulphuric acid in the proportion of 5 drops to 2 pounds of water, and allowing to rest over night, when the greater part of the water may be decanted perfectly clear. Pharm. Centralhalle, 1872, No. 26.

Lavender Water.—M. Delioux recommends the distilled water of lavender flowers as a vehicle for eye-water, and prefers it to rose water. Bullet. Therapeut., 1872.

Chlorine Water.—According to Mylius, chlorine water is best administered with simple syrup, by which it is also conserved better than with honey, glycerin, or syrup of marshmallow. Mucilage of gum will also answer well. The author finds that chlorine water, without such addition, gives off its chlorine very rapidly. Vierteljahrschr. f. Ph., 1872, Oct., p. 599.

Chlorinated Water.—Mr. M. R. Monroe proposes its preparation as follows: Throw 10 grains chlorate of potassium into a dry pint bottle, and pour in 1 fluidrachm of hydrochloric acid; then let it stand a few minutes, agitating occasionally; pour in 4 fluid ounces of water, and shake; then 4 fluid ounces more; shake, and add the rest of the water. Cork well and keep in a cool place. In this mixture, besides free chlorine, several intermediate oxygenated chlorine compounds are produced. Pharm. and Chem. Rec., May, 1873, p. 140.

ELIXIRS.

Compound Elixir of Cinchonia is prepared by R. Rother by bruising 2 troy ounces of fresh orange-peel to a fine pulp, mixing this with ½ troy ounce of finely powdered cardamom, and percolating with a mixture of equal measures of strong alcohol and water, until 3 pints of tincture is obtained. In the tincture, ½ troy ounce of sulphate of cinchonia and 2 drachms of sulphate of quinia is dissolved; it is colored with ½ fluidrachm of caramel, diluted with water to 5 pints, mixed with 3 pints syrup, and filtered. Pharm. and Chem. Rec., July, 1872, p. 150.

Ferrated Elixir of Cinchonia is prepared by Rother as follows: ½ ounce sulphate of cinchonia and 2 drachms sulphate of quinia are dissolved in acidulated water and precipitated. The well-washed, moist magma is mixed with 4 fluid ounces of water and 4 fluid ounces of syrup of ferric phosphate and ammonium citrate (see Syrups, in this report), and then 3 pints of aromatic tincture, prepared as directed for compound elixir of cinchonia, is added slowly with continued stirring. If the precipitate does not readily dissolve, sufficient concentrated solution of citrate of ammonium is added to effect solution. Sufficient water is then added to make the liquid measure 5 pints; this is mixed with 3 pints syrup, and the mixture is filtered. Pharm. and Chem. Rec., July, 1872, p. 151.

Ferrated Elixir of Cinchonia and Strychnia is prepared by R. Rother by dissolving 16 grains of strychnia in 1 fluid ounce of ferrated elixir of cinchonia (prepared as above), by the aid of 16 grains of acetic acid and heat, then adding sufficient of the same elixir to make 8 pints. Pharm. and Chem. Rec., July, 1872, p. 152.

Ferrated Elixir of Gentian is prepared by R. Rother by percolating 2 troy ounces of gentian, in No. 40 powder, 2 troy ounces fresh orange-peel, reduced to pulp, and ½ troy ounce of finely powdered cardamom seed, with sufficient of a mixture of equal measures of strong alcohol and water to make 3 pints of tincture; which is mixed with 4 fluid ounces of syrup of ferric phosphate and ammonium citrate, previously dissolved in 1¾ pints water, and 3 pints syrup. It is then filtered. Pharm. and Chem. Rec., July, 1872, p. 152.

Elixir of Ammonium Valerate is made by R. Rother by preparing from ½ ounce fresh orange-peel and 1 drachm cardamom, 6 fluid ounces of aromatic tincture in the same manner as directed in the above elixirs; then preparing from 2 drachms of valerianic acid, mixed with 2 fluid ounces of water, valerianate of ammonium, containing a slight excess of carbonate; mixing the solution so obtained with the aro-

matic tincture, sufficient water to make 10 fluid ounces, and 6 fluid ounces of syrup; then filtering. Pharm. and Chem. Rec., July, 1872, p. 153.

Elixir of Quinia and Taraxacum.—Such a preparation is suggested by James W. Long, and is prepared by percolating a mixture of 1½ drachms each Ceylon cinnamon and coriander, and ½ drachm each of anise and caraway, with 1 pint of vinum quiniæ,* following this by 2 fluid ounces of French brandy, adding 5 fluid ounces syrup, 2 fluid ounces fluid extract of taraxacum, and 3 fluid ounces cinnamon-water, mixing, and after allowing to stand 3 days, filtering. It will deposit by age. Am. Journ. Pharm., March, 1873, p. 105.

Elixir of Iron.—Mr. James W. Long suggests that a solution be made of 160 grains of pyrophosphate of iron in 6 fluid ounces of water, that this be mixed with 4 fluid ounces spts. vini gallici and 2 fluid ounces vinum aurantii, and that the mixture be filtered through a mixture of ½ drachm caraway, 1½ drachm coriander, ½ drachm anise, 2 drachms orange-peel, and 1½ drachm Ceylon cinnamon, ground and placed upon a filter. The filtrate is added to 4 fluid ounces of syrup, and made up to 1 pint by the addition of a mixture of 2 parts brandy, 2 parts wine of orange, and 1 part of water. Am. Journ. Pharm., March, 1873 p. 106.

Elixir of Citro-lactate of Iron. In imitation of a specialty of Dr. Thermes, of Paris, J. Dondé, of Merida, Yucatan, recommends the following: Dissolve 4 grammes of lactate of iron in 1400 grammes of rain-water, then add 27 grammes solution of citrate of iron and ammonium, 300 grammes white sugar, and 200 grammes aromatic spirit of garus. Am. Journ. Pharm., 1872, p. 446.

Elixirs containing Pepsin and Bismuth.—Mr. E. Scheffer, having examined several samples of elixirs of pepsin, containing also bismuth, and finding them utterly devoid of the

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* The dose of quinia in this elixir can be regulated by the proportions of the wine, and the elixir can be made to contain any amount, from 1 grain to 5 in a tablespoonful, and still be palatable.

property of dissolving coagulated albumen, endeavored in various ways to unite the two in form of an elixir, but without success. The difficulty in the way consists in the incompatibility of the two substances. Pepsin requires the presence of free acid for its solution, and is modified or precipitated from its solution by the action of alkalies, the alkaline earths, or saline compounds. Hence the ammonio-citrate of bismuth, even if it could exist in a solution sufficiently acid to dissolve the pepsin, would, owing to its property in common with other saline compounds, completely precipitate the pepsin. Scheffer therefore considers himself justified in stating that an elixir of pepsin is an incongruity, and that such an elixir may contain bismuth, but never pepsin. Am. Journ. Pharm., 1872, p. 346.

Contradictory of the above, Mr. James T. King states that an elixir prepared by him contains, besides strychnia, both pepsin and bismuth. Such an elixir is made by first thoroughly triturating 256 grains of Boudault's pepsin with water, filtering from starchy matter, and adding to the filtrate syrup, sherry wine, glycerin, and orange-flower water; to this a solution of strychnia in water, by the aid of citric acid, is added; then 64 grains of ammonio-citrate of bismuth is dissolved in water by the aid of gentle heat and a few drops of aqua ammoniæ, observing that no more of the latter is used than is absolutely necessary to form a clear solution; this solution is then added to that of pepsin and strychnia, making when finished 16 fluid ounces. A fluid ounce of this preparation, when digested with coagulated albumen for six hours, dissolved 6 grains; while 16 grains of Boudault's pepsin dissolved in a fluid ounce of distilled water and filtered from starchy matter, dissolved but $5\frac{3}{10}$ths grains. These remarkable results suggest the inference that, either the pepsin is improved by the ingredients with which it is compounded, or that the author's experiments were not conducted with the care that is requisite to the proper conduct of comparative experiment. Am. Journ. Pharm., 1873, p. 387.

EMULSIONS.

Emulsions.—Prof. P. W. Bedford proposes the use of glycerin along with gum arabic for preparing emulsions: 1 ounce of oil or balsam, ½ ounce each of glycerin, water, and gum arabic are triturated together, and finally the remainder of the water is added. The oil or balsam should not be over one-fourth of the whole mixture. Am. Drug. Circ., Jan. 1873, p. 24.

(An unexceptionable emulsion, as regards the consistence, is formed by the use of the proportions well known to all German pharmacists, viz., 4 parts oil, 3 parts water, 2 parts gum arabic, all by weight. Mix the oil and gum, or water and gum, it is indifferent which, and add the remaining ingredient. Then triturate well until the mixture becomes thick and homogeneous. It may then be diluted with any quantity of additional liquid that is desirable, provided it is not too strongly alcoholic. C. L. D.)

Emulsion of Copaiva, in which the taste of copaiva is almost completely covered, is prepared by Dr. C. G. Polk, as follows: 1 ounce copaiva, 2 drachms of liq. potassa, 4 drachms of powdered gum arabic, 4 drachms of powdered licorice, and 15 drops each of oil of wintergreen, oil of cinnamon, and oil of anise are rubbed together, and the mixture is made up to 8 ounces by the addition of 12 drachms of spirit of nitrous ether, 1½ ounces of syrup, 6 drachms of comp. tinct. of cardamom, and sufficient water. Am. Drug. Circ., March, 1873, p. 56.

Emulsion of Cod-liver Oil.—Mr. Herbert G. Robertson suggests the following method of making emulsion of cod-liver oil, which he states is handsome, permanent, and has an attractive, custard-like flavor: Shake together 1½ ounces of spiritus vini rect., 24 minims essentia amygd. (1 in 16), and 24 minims essentia limon.; then add 5 ounces ol. jecor. aselli, ½ ounce syrup, and sufficient mucilage of tragacanth to make 16 ounces, and shake vigorously. The mucilage is prepared in the proportion of 2½ ounces of selected gum tragacanth to 1 gallon of water, containing a little glycerin to insure its

keeping qualities. Pharm. Journ. Trans., March 8, 1873; Am. Journ. Pharm., April, 1873, p. 175.

The following mixture, containing 42 per cent. of cod-liver oil, is recommended by William G. Moffit:

℞. Pulv. Acaciæ,	℥ij.
Sacch. Alb.,	℥j.
Aquæ,	℥iv.
Spts. Vini Gall.,	℥iv.
Syr. Rub. Idæi.,	℥j.
Ol. Gaultheriæ,	gtt. xviij.
Ol. Morrhuæ,	℥viij.—M.

The brandy renders the emulsion more permanent, and if added last will not precipitate gum. Am. Journ. Pharm., April, 1873, p. 155.

Emulsion of Cod-liver Oil with Lacto-phosphate of Lime is prepared by Mr. William G. Moffit with 1 ounce powdered gum arabic, ½ ounce powdered sugar, 3 ounces lime-water, 1 ounce alcohol, 1 ounce cod-liver oil, 5 drops oil of wintergreen, and sufficient solution of lacto-phosphate of lime to make the strength of the preparation when finished 2 grains to a teaspoonful. Am. Journ. Pharm., April, 1873, p. 156.

Mr. Ed. Chiles prepares it by triturating together 2 ounces 2 drachms of powdered gum arabic (select), 2 fluid ounces of water, and 6 fluid ounces of syrup lacto-phosphate of lime, to form a smooth mucilage, then adding gradually 8 fluid ounces cod-liver oil, stirring constantly, and finally flavoring with 6 drops oil of bitter almonds. Am. Journ. Pharm., March, 1873, p. 104.

Mr. James T. Shinn proposes the following formula, which he states results in a palatable and otherwise satisfactory preparation: Take of cod-liver oil 1 pint, oil of bitter almonds, oil of peppermint, oil of wintergreen, each 10 drops, powdered gum arabic 4 ounces, powdered sugar 6 ounces, solution of lacto-phosphate of lime (1 drachm to 1 fluid ounce) 6½ fluid ounces,* lime-water 6½ fluid ounces. Mix the gum and

* The solution of lacto-phosphate of lime is made as proposed by Mr. Neergard, in Am. Journ. Pharm., June, 1871.

sugar in a capacious mortar, and make a smooth mucilage with the lime-water and 3 ounces of the solution of lacto-phosphate of lime. Add the volatile oils to the cod-liver oil, which gradually triturate with the mucilage until a perfect emulsion is formed. Finally, add the rest of the solution of lacto-phosphate of lime, and mix thoroughly. Am. Journ. Pharm., March, 1873, p. 135.

Emulsion of Cod-liver Oil containing Pyrophosphate of Iron is suggested by Mr. William G. Moffit. Powdered gum arabic 1 ounce, powdered sugar ½ ounce, water 4 ounces, cod-liver oil 5 ounces, and oil of bitter almonds 5 drops, are mixed properly so as to form an emulsion, and to this is added 1 ounce of alcohol to preserve and 200 drops concentrated solution of pyrophosphate of iron to ferrate it. Am. Journ. Pharm., April, 1873, p. 156.

Emulsion of Tar.—Roussin recommends that tar be triturated with sugar, gum arabic, and sufficient water to form an emulsion, which after standing for a time is decanted, and will then mix with water in all proportions. Pharm. Centralhalle, 1872, No. 30.

EXTRACTS.

Medicinal Extracts.—The propriety of retaining the chlorophyll in some of the medicinal extracts, as required by the British Pharmacopœia, has been questioned by J. B. Barnes, who from his experiments arrives at the conclusion, that extracts containing coloring matter are not of anything like uniform strength. The experiments extended over the narcotic extracts, belladonna, henbane, hemlock, wild lettuce, and aconite. In regard to henbane, he regards the temperature (130° Fahr.), too high, advocating a temperature of but 120° Fahr. for its concentration. Pharm. Journ. and Trans., Dec. 1872, p. 441.

Extracts.—The presence of *copper* and *tin* in solid extracts is ascertained by Hager, by dissolving the extract in 5 parts of water or very dilute alcohol, acidulating with a little mu-

riatic acid, and introducing a bright rod of zinc. The copper it recognized by its color upon the zinc, and an extract containing it is as a matter of course rejected, while if tin only is present the bright rod of zinc becomes dim and grayish-white. When neither are present the rod remains bright. If both tin and copper are present, the coating is scraped off, boiled a few minutes in a few drops of nitric acid, and then saturated with ammonia in excess. If tin is present, it is deposited in the form of amorphous white flakes. Pharm. Cent. Hall., 1873, No. 13.

Mr. Herm. Werner offers suggestions, and gives his experience with the preparation of a large number of extracts, and publishes in tabular form the yields of solid extracts (comprising sixty-one varieties) obtained by him, as compared with the yields of Hager and of Kostka. See Arch. f. Pharm., March, 1873, pp. 225 to 230.

Dry Narcotic Extracts, when prepared with dextrin, cannot be dissolved in alcoholic liquids, owing to the insolubility of the dextrin in the latter. W. Stromeyer prepares these extracts with sugar, and finds that they remain perfectly dry. It is necessary, however, to exsiccate the mixture at a temperature not exceeding 50° C. (= 122° F.), since a higher temperature causes them to remain soft. Thus prepared they dissolve readily in the usual solvents by simple agitation.

Extractum Krameriæ.—A commercial sample of extract of krameria has been found by E. Janota to contain considerable quantities of copper, from which the author judges that the sample tested reached Europe from South America, where considerable quantities are prepared for export, with what degree of care it is difficult to say. Pharm. Cent., 1872, No. 26.

Extract of Eucalyptus.—The following formula is given for its preparation in L'Union Pharmaceutique, Sept. 1872. Eucalyptus leaves, dried and cut, 1000 parts; water, 3000 parts; obtain by distillation the oil. Of the residue in the still, prepare an aqueous extract, which treat with 1000 parts of alcohol of 60

per cent., filter, concentrate the alcoholic liquid to the consistence of an extract, to which, while cooling, add the volatile oil, and mix intimately. Amer. Journ. Pharm., 1872, p. 541.

Extract of Malt.—L. W. Jassoy recommends the following method of extracting malt, which he states is uniformly successful, and by which the difficulties encountered in the processes usually adopted are entirely overcome. Coarsely ground malt is macerated three hours with its own weight of cold water, is then mixed with four times its weight of water, and is digested for one hour at a temperature not exceeding 65° C. (= 149° F.) It is then strained through a sieve, the strained liquid is reserved, and the residue mixed with 3 parts of hot water, and boiled thoroughly for about a quarter of an hour. The boiled mass is allowed to cool to 75° or 70° C. (= 167° or 158° F.), is strained through the same sieve and mixed with the reserved liquid, while the residue may be expressed, and the expressed liquid mixed with those previously mixed. The liquid which has been heated only to 65° C. (= 149° F.), contains active diastase, and when mixed with the other liquids, the mixture will be at a temperature of from 50° to 56° C. (= 122° to 132.8° F.), at which temperature the conversion of the starch into glucose is rapid, complete conversion being effected within a quarter of an hour. The liquid is then simmered down to one-third, by which albuminous matter separates as froth, and is removed. It is allowed to rest over night, is filtered through a conical filter of wool, and yields a perfectly clear sweet liquid, from which by evaporation an unexceptionable extract is obtained, amounting to 75 to 85 per cent. of the malt employed. N. Jahr. f. Pharm., March, 1873, p. 157.

Condensed Milk.—The process of condensing milk as conducted in a very extensive establishment, together with an estimate of the cost of erection of such an establishment, and of the cost of production of condensed milk, will be found in Amer. Drug. Circ., Jan. 1873, p. 36.

The testimony of Surgeon Hoffman, who has had abundant experience, and cites numerous instances, places condensed

milk (prepared by the American method, by evaporating milk with cane-sugar in a vacuum to the consistence of honey), among the most useful artificial dietetics for infants. Introduced in Europe during the Exposition of 1867, its use has increased with marked rapidity. Apothek. Zeit., 1872, No. 32.

FLUID EXTRACTS.

Mr. William C. Gill draws attention to the effect of using *glycerin* in some fluid extracts, finding that it is doubtless beneficial when used with some, while with others it has just the opposite effect. Thus fluid extract of valerian, in which one-fourth the alcohol was substituted by glycerin, while at first superior in outward appearance to the officinal preparation, changed to a muddy liquid at the expiration of five weeks; while the officinal remained unchanged. The author's experience with buchu, cubebs, and lupulin is similar to that with valerian. With ginger, on the contrary, the introduction of glycerin secured a better and handsomer fluid extract. Fluid extract of pokeroot, when made with dilute alcohol, is a good and satisfactory preparation. When glycerin was introduced, it became gelatinized and semisolid on standing three weeks. Several other fluid extracts have been observed to change in a similar way from the same cause. Amer. Journ. Pharm., May, 1873, p. 200.

Mr. Umney exhibited at a recent meeting of the Pharmaceutical Society of Great Britain, six samples of fluid extracts, including cinchona, calumba, ergot, rhubarb, taraxacum, and pareira, made according to the United States Pharmacopœia. The preparations, according to Mr. Umney, surpass by far the fluid extracts of British pharmacy, and are very elegant. The preparation of taraxacum was much stronger than any officinal preparation of the same root in the British Pharmacopœia. Mr. Sanford believes the fluid extract of pareira of the British Pharmacopœia to be a superior preparation to that exhibited as a preparation of the United States Pharmacopœia. Pharm. Journ. Trans , 1873, March 8th, p. 715.

Fluid Extract of Gentian.—A writer in the Canadian Pharmaceutical Journal, August, 1872, endeavoring to find a formula for fluid extract of gentian, adopted for one of his experiments water acidulated with sulphuric acid for exhausting the gentian, and neutralized the acid, percolating subsequently through chalk. By the use of water, acidulated with one ounce of sulphuric acid to the gallon, the percolation proceeded regularly, and at a satisfactory rate, while when water alone was used, the gentian swelled up to such an extent as to render the process almost interminable. The resulting preparation was, however, not satisfactory, whether on account of inferior quality of the root used, or a defect in the process, the author has not determined, while in appearance it left nothing to be desired, it being clear, of a dark brown, and forming a clear mixture with water. It was only one-half as bitter as a fluid extract prepared with proof spirit, and purchased from a reliable house. Can. Pharm. Journ., Aug. 1872, p. 1.

Aqueous Fluid Extract of Rhubarb.—Mr. George Bille has prepared an aqueous fluid extract of rhubarb, which he states is less disagreeable to the taste than the officinal fluid extract, keeps well, and is active in doses of a fluidrachm. The rhubarb is exhausted by percolation with water, the percolate from 16 ounces of root is evaporated to 12 fluid ounces, and 4 fluid ounces of glycerin are added.

The author has determined that the fluid extract so prepared contains all the active constituents of rhubarb. The residue remaining in the percolate, was exhausted successively with alcohol, diluted alcohol, and finally again with water, and the mixed percolates, after concentrating, were found to be entirely inactive in doses corresponding to 3 fluid ounces of the fluid extract.

The author's experiments furthermore seem to indicate that the activity of rhubarb is dependent upon some other principle or principles than phœoretin, aporetin, erythroretin, or chrysophanic acid, all of which were found abundantly in the alcoholic percolate of the rhubarb which had been previously

exhausted by water; while in the aqueous fluid extract phœoretin seems to exist in considerable quantities; aporetin in small quantity; and of erythroretin and chrysophanic acid, only traces. Amer. Journ. Pharm., 1872, p. 483.

Fluid Extract of Rhubarb.—R. Rother states, that when rhubarb is extracted with a mixture of 2 volumes of alcohol and 1 volume of water, all the constituents soluble both in water and alcohol are extracted, and if to the percolate a small percentage of ammonia is added, and it is then evaporated to the consistence of syrup, the latter will be entirely soluble in water again, and may be preserved perfectly by the addition and solution of sugar. By adding to the percolate obtained from 16 troy ounces of rhubarb, 1 fluid ounce of 16 per cent. ammonia-water, evaporating to syrup, mixing with 7 to 8 troy ounces of sugar, and sufficient water to make one pint, the proposed fluid extract is obtained. Besides containing no alcohol, it possesses the advantages of being thin and syrupy in consistence. Pharm. and Chem. Rec., Dec. 1872, pp. 265 to 268.

Fluid Extract of Valerian.—Mr. Munroe Bond finds fluid extract of valerian, made according to the Pharmacopœia, unsatisfactory, and suggests its preparation by following the general method given in the Pharmacopœia for fluid extracts containing four fluid ounces of glycerin. By this method he obtained a fluid extract richer and heavier in appearance, possessing a more powerful and much finer odor, and superior in every way to the officinal preparation. Am. Journ. Pharm., May, 1873, p. 199.

Fluid Extract of Wild Cherry Bark.—Mr. Harry W. Powers does not believe that the new formula of the Pharmacopœia secures an accurate representative of the wild cherry bark, and prefers the old formula, with some modifications. The author believes the fixed oil in the sweet almonds to be objectionable, and removes it by treating the almonds, beaten to a paste, with benzin by percolation. The powder, remaining in the percolator, is dried at a temperature not exceeding 100° F., and is then percolated with water. The aqueous percolate

is then used instead of the almond paste mixture directed in the former officinal formula, and the result is a fluid extract, which, according to the author's views, is preferable to that made by the new process. Am. Journ. Pharm., June, 1873, p. 246.

GLYCEROLES.

Glycerole of Assafœtida.—Alonzo Robbins prepares a glycerole of assafœtida, which he states will make milk of assafœtida of the proper pharmacopœic strength. Two ounces of selected assafœtida are cut quite fine, put into an eight-ounce bottle, and five fluid ounces of glycerin are added. The bottle, being well corked, is suspended in a can of water, which is placed upon a part of the stove where the heat is moderate. It is allowed to digest several days with frequent agitation, is then strained through a coarse cloth, and the residue returned to the bottle together with three fluid ounces of glycerin. This is treated as before, and the strained liquid is mixed with that previously obtained, and brought to the measure of eight fluid ounces. One fluidrachm, mixed with seven fluidrachms of water, furnishes unexceptionable milk of assafœtida. Am. Journ. Pharm., 1872, p. 348.

Glycerite of Ginger is prepared by Mr. J. B. Moore by triturating 1 fluid ounce fluid extract of ginger with 10 drachms carbonate of magnesia, then adding gradually a pint of a mixture of equal measure of glycerin and water, mixing well, and straining with strong expression. The residue is mixed and expressed in the same manner with a pint more of glycerin and water (equal measures); the expressed liquids are united, shaken together vigorously, filtered, and brought with water to the measure of two pints. Pharm. and Chem. Rec., March, 1873, p. 172.

Glycerin Lemonade.—O. Schulze proposes the following mixture in the treatment of diabetes mellitus: Glycerin. pur. 20.0 to 50.0 grammes, aqua fontanæ 1000.0 grammes, acid. citric. (or tartaric), 5.0 grammes. M. To drink during the day. Apoth. Zeit., No. 2, 1873.

INFUSIONS, ETC.

Conc. Infus. Gentian. Comp.—Mr. R. Rother proposes to keep on hand a concentrated compound infusion of gentian, made by extracting the ingredients of the Pharmacopœia with a diluted alcohol, composed of equal measures of strong alcohol and water, in such manner that the finished tincture should measure four fluid ounces for each pint of infusion wanted. The author also suggests the use of moist fresh orange-peel, and that it be subjected, in the form of pulp, to preliminary maceration before percolating the remaining ingredients. Three parts of water added to one part of the tincture will form a substitute for the compound infusion. Pharm. and Chem. Rec., May, 1873, p. 129.

(Your reporter has been in the habit of making a concentrated infusion by using the ingredients of the Pharmacopœia, and percolating with a mixture of one part of alcohol and three parts of water, until half a pint of percolate is obtained for each pint of infusion desired. In this there is sufficient alcohol to keep it, and not sufficient to give it the character of a tincture, while the infusion obtained by mixing it with an equal measure of water is not distinguishable from that made strictly according to the process of the Pharmacopœia. Mr. Shinn suggested a concentrated infusion of gentian in 1862. See Amer. Journ. Pharm., 1862, p. 307.—C. L. D.)

Infusion of Wild Cherry Bark.—Mr. J. B. Moore suggests an improvement in the formula for infusion of wild cherry bark, which consists in the use of a portion of glycerin along with the water. One-half ounce of wild cherry bark in powder No. 60, is moistened with 6 fluidrachms of water (temperature 86° F.), the moistened bark is allowed to stand two hours, and is then percolated with a mixture of 2 fluid ounces of glycerin and 10 fluidrachms of water (temperature 86° F.), followed by sufficient water at the ordinary temperature until a pint of infusion is obtained. The infusion so prepared contains, in addition to the principles ordinarily extracted, the bitter principle; is consequently more bitter to

the taste, and of a darker color than the officinal infusion, and possesses, in the opinion of the author, other advantages, which he draws attention to in his paper.

Infusion of Wild Cherry Bark with Tar is prepared by the author from the infusion, as above recommended, by agitating together one pint of pure tar and four pints of the infusion. The glycerin contained in the infusion aids in extracting the active virtues of tar to a more satisfactory degree than if water alone is used, and the combination of tar and wild cherry bark is regarded as desirable. Am. Journ. Pharm., June, 1873, p. 241.

Beef Tea.—Dr. H. C. Wood proposes in New Remedies the following process: Take a thin rump-steak of beef, lay it upon a board, and with a case-knife scrape it. Mix the red pulp obtained with three to four times its bulk of water, stirring until completely diffused; bring to slow boil on a moderate fire, season to taste, and use without straining; giving one to three fluid ounces at a time.

LINIMENTS.

Soap Liniment.—Mr. L. E. Sayre advocates the use of castor-oil soap, in place of Castile soap, for making soap liniment; such a soap being readily made by boiling castor oil with solution of caustic potassa, until a thick mass forms that can be drawn into threads, and then separating the soap by means of solution of common salt. Soap liniment, made with castor-oil soap, remained perfectly transparent at a temperature of 32° F., while the officinal preparation became quite thick. Mr. Charles H. Clark had previously advocated the substitution of castor-oil soap for Castile soap in soap liniment, samples of both the soap, and liniment made with it, being in the possession of the Philadelphia College of Pharmacy. Amer. Journ. Pharm., 1872, p. 529.

NOTE.—It is true that the soap liniment of the Pharmacopœia of 1860 becomes turbid, when the temperature is reduced to the ordinary winter temperature. This is to a great extent obviated by the slight increase of water, directed in the new Pharmacopœia.

Spiritus Saponatus.—G. H. Barkhausen proposes to prepare it by mixing together 100 parts of olive oil, and 300 parts of an alcoholic solution of caustic potassa, containing 16.5 parts KO, digesting the mixture for one hour, at a temperature of 100° C. (212° F.), and mixing with it 250 parts of alcohol and 350 parts of rose-water.

Liquid Opodeldoc is prepared by the same author by adding to the mixture of olive oil and alcoholic solution of potassa, after digesting as above, 600 parts alcohol, 400 parts water, 25 parts camphor, 5 parts oil of thyme, 10 parts oil of rosemary, and 40 parts aqua ammoniæ. (See Soaps, in this report.) Arch. f. Pharm., Jan. 1873, p. 21.

Iodide of Ammonium Liniment.—Prof. Bedford gives the following formula: Iodine 15 grains, alcohol 8 ounces, camphor 2 drachms, oil of lavender, oil of rosemary, each 1 drachm, water of ammonia 1 ounce. M. Amer. Drug. Circ., March, 1873, p. 56.

MIXTURES.

Chloroform Mixture.—The following mixture is proposed for the internal administration of chloroform: Mix together 2 parts chloroform, 3 parts oil of sweet almonds, and 40 parts syrup of acacia. Dose, a teaspoonful. Amer. Drug. Circ., Sept. 1872, p. 152; from Revue de Thérap. Medico-Chirurg.

MUCILAGES.

Mucilage of Gum Arabic.—According to A. Hirschberg, powdered gum arabic is moistened with alcohol, then dissolved in water, and a few drops of sulphuric acid are added to the solution; such solution, after decanting from precipitated gypsum formed, will keep for a long time without change. Solutions of gum are thus also rendered colorless, even when the gum used is not perfectly white. Chem. Cent. Bl., 1872, No. 31.

Mucilage of Tragacanth.—Rub 1 drachm of powdered tragacanth with 6 drachms of glycerin, and add enough water to make 10 ounces. This will make a mucilage of excellent quality. Amer. Drug. Circ., June, 1873, p. 105.

PASTILLES.

Asthma Pastilles.—Mr. Hustwick prepares asthma pastilles as follows: Pasteboard, broken down with water, 4 ounces; nitrate of potassa, 2 ounces; belladonna, stramonium, digitalis, lobelia, of each, 20 grains; myrrh, olibanum, of each, 2½ drachms. Incorporate all these together, and divide the mass into pastilles; burn them in a saucer in a well-shut room. Amer. Journ. Pharm., 1872, p. 567.

Fumigating Pastilles of Coffee.—Mr. George C. Close proposes the following: Mix 4 drachms coffee, freshly roasted and ground, 2 drachms powdered chlorate of potassa, and 4 drachms powdered gum tragacanth; form into a mass by means of 3 drachms simple syrup, and make pastilles of convenient size, which dry without heat. The coffee should not be very fine, but perhaps finer than it is ordinarily ground. The pastilles afford an excellent fumigating disinfectant and deodorizer. Amer. Drug. Circ., Sept. 1872, p. 152.

PILLS.

Excipient for Pills.—Mr. Walter Tearle proposes as a substitute for soluble tartar (boro-tartrate of potassium) in mucilaginous condition—suggested by Mr. J. B. Barnes as an excipient for forming certain untractable bodies into pills—a solution of neutral citrate of potassium in syrup and glycerin, mixed with an equal volume of a solution of soluble tartar in the same menstruum. Mr. Barnes's excipient is objectionable, because forming pills which acquire by age flinty hardness, and it is applicable only to very soluble substances; while the substitute offered is preferable for insoluble substances, it forming with them pills that retain their consistence satisfactorily when in contact with lycopodium. Pharm. Journ. and Trans., July, 1872, p. 62.

Pills of Protoxide of Iron, when prepared by the formula proposed ten years ago by Kirchman, keep perfectly. 8.0 grammes crystallized sulphate of iron, and 1.3 gramme calcined magnesia, are intimately mixed and formed into 60 pills,

by the aid of 16 drops of glycerin. They are easily coated with sugar, and are readily soluble in water, leaving a magma of protoxide of iron. As sulphate of iron and sulphate of magnesium require the same amount of water of crystallization, the pills form with glycerin a very handsome mass, which also prevents the efflorescence of the sulphate of magnesium formed, while the latter, covering the protoxide of iron intimately, prevents its oxidation for years. Hager, in Pharm. Centralhalle, 1873, No. 2.

Pills for Tapeworm.—Peschier's pills for tapeworm are prepared by forming a pill mass with 1.6 gramme ext. filicis æth. and 1.6 gramme pulv. rhizom. filicis, dividing into 20 pills, and rolling them in lycopodium. Dose: 10 in the morning, and 10 at night, following the last dose with a clysma of 2.0 grammes ext. filicis, emulsionized with 15.0 grammes gum arabic and sufficient water. Apoth. Zeit., 1872, No. 5, from Pharm. Centralhalle.

PLASTERS.

Adhesive Plaster.—According to O. Facilides, spread adhesive plaster that has lost its adhesive qualities and has become brittle, may be rendered adhesive again by coating it with oil of turpentine by means of a sponge or pencil, and leaving it exposed for a day. Zeitschr. Oest. Apoth. Ver., 1872, No. 28.

Liquid Adhesive Plaster.—Such a plaster is proposed by J. Bapt. Enz, and recommended by him as possessing remarkable adhesive qualities. 560 parts of finely powdered select Dammar resin are melted at a gentle heat with 142 parts of oil of sweet almonds, 70 parts of castor oil, and 30 parts of pure glycerin. It is then allowed to cool partly, and gradually mixed with spirit of ether (Ph. Germ.), in which anilin red has been dissolved to impart color to the plaster. The Dammar resin is readily dissolved by the fixed oils; upon the addition of the spirit of ether it is partially precipitated in a minutely divided, pasty condition. The components of the resin so precipitated confer upon the plaster its remarkable adhesive property. The author recommends its application, either direct

upon the wounds, followed by the usual bandaging, which will then adhere perfectly; or spread *as required* upon fabrics prepared in the usual way for plaster spreading. To such it imparts a brilliant mirror-like surface and perfect adhesive power. He also regards it of high value as a vehicle for medicines that are desirably applied in form of plaster, and are soluble in alcohol. Other colors, if desirable, may be imparted to it; such as yellow, with curcuma; orange-red, with dragon's blood; brown, with permanganate of potassium, &c. Pharm. Centralhalle, 1872, No. 26.

Taffetas Vesicans Cantharidinatum.—Cantharidinated tissue is recommended by Mr. Ernst Rosenberg, and is prepared by him as follows: 3 ounces of powdered cantharides are boiled with 20 ounces of alcohol (92 per cent. Tr.), acidulated by 205 drops dilute sulphuric acid; it is allowed to cool, expressed, the residue boiled again with 19 ounces of alcohol and 195 drops of dilute sulphuric acid, and again expressed; the residue is now boiled with 9 ounces of water and 92 drops of dilute sulphuric acid, and expressed as before. From the mixed liquids the alcohol is distilled, the aqueous residue is allowed to stand to separate fat, which is removed, well washed with water, and the washings added to the remaining aqueous liquid, which is then agitated with 6 ounces of ether. The ethereal solution, containing, to a minimum, all the cantharidin, is separated, and to every ounce of it, 1½ drachms of boiled turpentine (Terebinthina cocta), ½ drachm sandarach, and 10 drops of olive oil are added. The solution so obtained is spread upon silk, previously prepared by giving it two coatings of solution of isinglass. Four coatings of the vesicant solution are given, allowing each coating to dry before putting on the next. Finally, the tissue is finished by giving it a coating of an alcoholic solution of isinglass, prepared by macerating half an ounce of the finest isinglass for twelve hours in alcohol of 38 per cent. Tr., boiling it up two or three times, and adding 40 drops of glycerin. The tissue so prepared is active, and is readily applied and removed by moisture. Pharm. Zeitschr. f. Russ., 1872, No. 20.

Court Plaster.—Mr. Arthur S. French gives the following formulas for preparing court plasters:

No. 1. Soak 1 ounce Russia isinglass in 1 pint of water for one day, then dissolve it by the aid of heat, strain the solution, and add 1 fluid ounce alcohol and ½ fluidrachm glycerin. The solution so obtained is spread on fine silk, stretched on a frame, each coat being allowed to dry before applying the next, and avoiding the use of heat in drying; heat having the effect of leaving the plaster streaked.

No. 2 is prepared from 1½ ounces Russia isinglass, using the same proportion of all the other ingredients except of alcohol, of which sufficient is used to dissolve 14 drachms of finely powdered resin, and the resinous solution is added to the isinglass solution. Court plaster so made, while adhesive, is not as handsome as by No. 1.

No. 3 is made from 1½ ounces of gelatin, 6 ounces water, and 1 fluidrachm glycerin, in the same manner as No. 1. When spread on coarse, heavy silk, it makes a white, opaque plaster; spread upon fine silk, a nearly transparent plaster of a yellowish tint. Amer. Journ. Pharm., May, 1873, p. 206.

POWDERS.

Saccharated Oxide of Iron.—Duquesnel adds to a concentrated solution of perchloride and tersulphate of iron, 20 per cent. of syrup, followed by caustic soda solution, drop by drop, until the solution exhibits slightly alkaline reaction. The transparent liquid so obtained, containing besides the saccharate of iron, some chloride of sodium, and sulphate of sodium, is treated with a large excess of alcohol, by which the saccharate of iron, containing only as much sugar as is necessary to its solubility in water, is thrown down in the form of a black-red precipitate. So prepared, the saccharate, when dry, is odorless, of a sweetish, not at all ferruginous taste, and very soluble in water, forming deep red solutions. Belg. Journ. de Pharm., Oct. 1872.

Ferrum Oxydat. Sacchar.—Dr. C. Schacht states that the method proposed by Hager for the quantitative determina-

tion of iron in saccharates of iron (see Pharm. Centralhalle, 1871, p. 59), gives incorrect results, a portion of the iron remaining in the filtrate. By the following method accurate results are obtained: The saccharate being heated in a platinum vessel to destroy organic substances, is triturated to a fine powder, nitric acid, specific gravity 1.185, is added, and the mixture is heated upon a water-bath. After evaporating the nitric acid, the residue is treated with a fresh portion in the same manner, and this is repeated a third time. Dilute sulphuric acid (specific gravity 1.113), is then added, the mixture evaporated to dryness, divided again in dilute sulphuric acid, the solution transferred to a small retort with a long neck, treated with zinc, and titrated with solution of permanganate of potassa. The results are perfectly accurate. Arch. d. Pharm., Jan. 1873, p. 15.

Gran. Effervescing Vichy Salts are prepared by Mr. Charles L. Mitchel as follows: Mix together 7 ounces dry bicarb. of soda; 13½ ounces dry powdered sugar; 252 grains dry precipitate carbonate of lime; 64 grains dry carbonate of magnesia; 60 grains dry saccharated carbonate of iron; 2 ounces dry chloride of sodium; 2 ounces dry sulphate of soda; and 10 ounces powdered citric acid; pass through a No 60 sieve; moisten with 3½ fluid ounces stronger alcohol, and granulate through a No. 8 sieve. Dry at a temperature not exceeding 120° F.; sift through a No. 8 sieve; bottle and keep dry. So prepared the preparation remains perfectly white, in the author's experience, over two months. Am. Jour. Pharm., 1873, Feb., p. 59.

Tooth Powder.—Enderlin gives the following formula, which forms a very handsome red tooth-powder: 40 parts cochineal, 30 parts alum, 320 parts cream of tartar, are made into a paste with distilled water, heated upon a steam-bath several hours, mixed with 250 parts oss. sepiæ, dried, powdered, and triturated with sufficient oil of sweet almonds to give the resulting powder a fine gloss. It is perfumed with oil of rose, or a mixture of 1 part oil of rose and 2 parts oil of peppermint.

Wollenweber proposes a similar formula, in which prepared chalk is substituted for oss. sepiæ. Pharm. Zeit., 1872, No. 53.

SOAPS.

Medicinal Soap.—G. H. Barkhausen proposes the preparation of medicinal soap as follows: 100 parts olive oil are mixed with 150 parts of an alcoholic solution of caustic soda, containing 12 parts NaO, the mixture is heated to 100° C. (212° F.), until solution is effected; 200 to 300 parts of water are added, and the solution evaporated to dryness upon a water-bath. The soap contains of course the glycerin, which the author considers an advantage, as it prevents rancidity. By this process, a soap is obtained containing considerably less alkali than when the saponification is conducted with water, and the author gives the following figures in support of his statement:

Olive oil is completely saponified with 16.5 per cent. KO, or 11 per cent. NaO, in alcoholic solution, at 100° C. (212° F.); with 18.5 per cent. KO, or 12 per cent. NaO, in alcoholic solution at 100° C. (212° F.), and subsequent addition of water and heating; with 25 per cent. KO, or 16 per cent. NaO, when water alone is used.

The method is also proposed for making spiritus saponatus and liquid opodeldoc, in which KO is substituted for NaO. (See Liniments, in this report.) Arch. f. Pharm. Jan. 1873, p. 20–21.

The presence of free alkali in soap is determined by Stas by triturating calomel with a solution of the suspected soap, by which, if alkaline, black protoxide of mercury is formed. Instead of calomel, W. Stein proposes corrosive sublimate as more convenient. It may be used in the form of solution upon the soap directly, without first dissolving it, as is necessary when calomel is employed, by simply moistening a freshly cut surface of the soap, when, if free alkali is present, the characteristic color of binoxide of mercury is produced. The presence of a large amount of chloride of potassium (sodium?), however, causes the reaction to become indistinct from forma-

tion of a white precipitate. Pharm. Centralhalle, 1872, No. 26; from Ch. Cent. Bl.

Green Soap.—Messrs. William McIntyre and Gustavus Krause contribute the following relating to green soap: Commercial soft or green soap is usually made now, wholly or in part, from common whale or other fish oil, which are saponified with caustic potash, and the green color is imparted by pigments. Frequently soft soap of a blackish or rather of a dirty color is met with. The following formulas for liquid preparations of the green soap, which are employed for the cure of itch, and in various cutaneous diseases, are furnished.

Lotio Saponis Viridis (Professor Hebra).—Green soap, 1 ounce; boiling water, 1 pint; oil of lavender, ½ drachm. Mix.

Spiritus Saponatus Kalinus (Professor Hebra).—Green soap, 2 parts; 95 per cent. alcohol, 1 part. Scent to suit.

Tinct. Saponis vir. cum pice (Professor Hebra).—Green soap, tar, alcohol, equal weights of each.

Tinct. Saponis vir. comp. (Tilbury Fox.)—Green soap, oil of cade, alcohol, each 1 ounce; oil of lavender, 1½ fluidrachms. Mix. Am. Journ. Pharm., May, 1873, p. 209.

Silicate of Soda Soap (Water-glass composition).—W. O. Schellhass has examined a preparation, introduced into German commerce as a substitute for ordinary soap, and states that it possesses many advantages that ordinary soaps do not possess, and being considerably cheaper, merits more general introduction. In order to make its composition more generally known, he subjected it to chemical examination, and found it to contain 59.95 per cent. of water, 12 per cent. fatty acids, 18.07 per cent. silica, 2.84 per cent. glycerin, and 7.12 per cent. soda. It is perfumed with oil of bitter almonds (or nitrobenzole?). N. Rep. f. Pharm., 1872; Pharm. Centralhalle, 1873, No. 2.

The editor of the Apotheker Zeitung (No. 31, 1872), observes that it is by no means determined, that this new soap is not injurious to the fabrics washed with it, and that this

can only be determined by comparative experiments and by experience.

SOLUTIONS.

Concentrated Solution of Acetate of Ammonia.—Such a solution is proposed by Mr. R. W. Fredericks, and is prepared by saturating acetic acid with carbonate of ammonium, taking care to render the solution very slightly acid if it has become alkaline by the use of carbonate of ammonium. It is then evaporated to the measure of acetic acid originally used. One measure of the solution, diluted with 7 measures of water, form officinal liquor ammon. acet. Pharm. and Chem. Rec., May, 1873, p. 135.

(Your reporter having prepared such a solution for several years, can bear testimony to the stability and convenience of such a solution.—C. L. D.)

Solution of Citrate of Magnesium.—Dr. C. G. Polk proposes the following: Dissolve 3 ounces citric acid in 10½ ounces of rain-water by heat, add gradually 12 drachms carb. magnesium previously rubbed with 8 drops oil of lemon, stirring until dissolved. Divide the solution in six bottles, add to each 1½ ounces of syrup, and sufficient water to measure 12 fluid ounces; then add to each bottle 32 grains of bicarbonate of soda and immediately cork. The author remarks that solution of citrate of magnesia so made keeps well, is pleasant to the taste, and generally gives satisfaction. He appends another formula "for those who prefer a very superior article," in which the amount of citric acid employed being nearly doubled, approaches the officinal requirement. Am. Drug. Circ., Feb. 1873, p. 41.

(It is certainly not a matter of surprise that solution of citrate of magnesium prepared with but half the quantity of citric acid required by our Pharmacopœia should be prepared at but half the cost; but it is quite surprising that it should give general satisfaction, and that it is recommended by an M.D.—C. L. D.)

Magendie's Solution of Morphia is, according to the experience

of Prof. Christopher Johnston, perfectly preserved by the addition of a little sulphurous acid, the proportion being, according to Mr. Jennings, 3 to 5 drops of officinal sulphurous acid to 1 fluid ounce. The addition does not interfere with the application of the solution for hypodermic use. Am. Journ. Pharm., May, 1873, p. 200.

Liquor Ferri Perchlor.—Mr. E. B. Shuttleworth, in a paper upon this solution, officinal in the British as well as the United States Pharmacopœia, suggests the following manipulation, in operating by the British process, in order to insure uniform and satisfactory results: The iron wire to be added to the dilute muriatic acid, and the action allowed to go on during the night. Application of gentle heat in the morning until the complete solution of the metal. Filtering the solution, mixing with reserved hydrochloric acid, bring to the boiling temperature, and adding nitric acid in small portions so long as effervescence is produced or the liquid assumes the characteristic red color. Heating the solution until reduced to 8 fluid ounces for each 2 ounces of iron used, and then bringing to the required bulk with water. The specific gravity of the liquor officinal in the British Pharmacopœia is given at 1.338; the author finds this to be erroneous, the specific gravity being 1.443. Can. Pharm. Journal, 1873, p. 193.

Solution of Iodide of Lead is proposed by Dr. Donato Tommasi as useful for external purposes, as follows: Concentrated solution of acetate of sodium, 15 c.c.; glycerin, 23 c.c.; iodide of lead, 0.40 gramme; rose-water, a few drops. (See Iodide of Lead, in this report.) Am. Journ. Pharm., 1872, p. 331.

SUPPOSITORIES.

Suppositories.—Mr. A. W. Gerrard has experimented upon materials suitable for suppositories, and recommends a mixture of equal parts of paraffin and oleum theobromæ as the most suitable. Mixtures of glycerin and isinglass, glycerin and gelatin, glycerin and starch, and glycerin and soap, had been tried, but were discarded as unfit for the purpose. With

regard to mixtures of glycerin and soap, he found that they would unite and form a solid mass in the proportion of 80 parts of glycerin and 20 parts of soap, and that the mixture moulded easily; but he found that in a few hours suppositories so prepared were covered with an exudation of glycerin.

Mr. R. Rother offers some remarks upon suppositories in the Pharm. and Chem. Rec., Sept. 1872, p. 221.

Mr. William B. Addington recommends that the moulds should be lined with tinfoil, which enables the removal of the suppositories, after casting and cooling, with great readiness. He manipulates with a smooth stick the shape of the mould, when lining them with the foil, and pours the material in, when cooled as far as possible. The foil is readily removed. Am. Journ. Pharm., June, 1873, p. 257.

Charles E. Dwight gives directions for preparing suppository moulds with plaster of Paris, which will recommend itself to those that cannot make suppositories without a mould. Am. Journ. Pharm., 1873, Jan., p. 5.

SYRUPS.

Syrup of Orange-Peel, when made with the tincture of fresh orange-peel, as suggested by Mr. Symes (see Tinctures, in this report), does not lose its fine aroma by age. The author suggests the experiment whether beating the fresh orange-peel with a small quantity of sugar when making the tincture from it has not a tendency to keep it unchanged. Pharm. Journ. and Trans., Nov. 1872.

R. Rother proposes a method of its preparation, according to which the orange-peel, in fragments, is first heated for an hour upon a water-bath with water, is then bruised, mixed with a certain proportion of alcohol, and the mixture is then subjected to evaporation. After adding water and some sugar, the mixture is poured upon a strainer, pressed out, but to a definite measure, and converted into syrup by the further addition of sugar. A syrup prepared by this method, its author claims to be finely flavored, slightly opalescent, green-

ish-yellow, and free from bitterness. See Pharm. and Chem. Rec., May, 1873, p. 166.

Syrup of Rhubarb.—R. Rother proposes that it shall be prepared as follows: 6 troy ounces of rhubarb, in very fine powder, is percolated with a mixture of 2 volumes of strong alcohol and 1 volume of water, until about 18 to 20 fluid ounces have passed; to this 3 fluidrachms of ammonia-water (16 to 18 per cent.) is added, and it is evaporated at a gentle heat to a syrupy consistence, the syrupy liquid is diluted with water to 2 pints, 3½ pounds avoirdupois is added, dissolved by heat, and the resulting syrup strained. On the same principle, the author prepares

Aromatic Syrup of Rhubarb, the quantities of rhubarb, cloves, cinnamon, and nutmeg of the pharmacopœic formula being used. The rhubarb is percolated with the alcohol mixture as above, until eight to ten fluid ounces of liquid has passed, to which two fluidrachms of ammonia-water is added, and it is then evaporated to syrupy consistence, is mixed with one half pint syrup, gently warmed, and then incorporated with 6 pints more of syrup. A percolate of 8 fluid ounces is meanwhile obtained from the aromatics, by means of an alcoholic menstruum of same strength as above given, and this is mixed with the syrup.

The author claims that by the use of ammonia and stronger alcohol than is usual, the total constituents of the rhubarb are exhibited in neutral, perfect, and permanent solution. Pharm. and Chem. Rec., Dec. 1872, p. 265–269.

Syrup of Ipecacuanha.—Mr. B. F. McIntyre, by his experiments with fluid extract of ipecacuanha, made according to the officinal formulas of the Pharmacopœias of 1860 and of 1870, arrives at the conclusion that the old formula is more reliable than the new, for making syrup, when the following modification is adopted: Dilute 1 fluid ounce of fluid extract with 16 fluid ounces of water, set aside for twelve hours, filter, evaporate to 6 fluid ounces, filter, add through filter 1 fluid ounce water, then dissolve 12 troy ounces sugar with

gentle heat, and make the syrup measure 16 fluid ounces. Am. Drug. Circ., June, 1873, p. 104.

Compound Syrup of Licorice Root is prepared by Mr. R. Rother as follows: 48 troy ounces of licorice root in powder No. 24, is moistened with 1 pint of a mixture of 1 fluid ounce of ammonia-water and 12 pints of water, and two-thirds of the root so moistened is packed into a glass percolator. The remaining one-third of the moistened root is then heated for ten or fifteen minutes to a temperature of 100° F., stirring constantly, and, after cooling, is also packed into the percolator. The remainder of the menstruum is then poured on until 12 pints of percolate has slowly passed, to which 24 troy ounces of chloride of ammonium is added, the whole is evaporated to 7 pints, filtered hot, 10 pounds avoirdupois sugar dissolved in it, and the syrup strained while hot.

By heating a portion of the moistened root as above indicated, the author succeeds in avoiding the precipitation of albuminous matter from the percolate when evaporating it, and finds it to filter clear readily. He ascribes the effect to solvent action of starch upon albumen. (See Albumen, in this report.) Pharm. and Chem. Rec., Nov. 1872, p. 250.

Lemon Syrup is prepared by J. Dondé, by concentrating 50 centilitres of syrup, by boiling to 33°, and when cool adding 45 grammes of lemon-juice, which has been clarified by repose. One ounce and a half of this syrup, and 8 ounces of water will make a very agreeable lemonade. Am. Journ. Pharm., 1872, p. 446.

Cherry Syrup for soda-water, is recommended by A. W. Miller, M.D., to be prepared from 1 quart of German cherry-juice, by the addition of 1 quart of water, 7½ pounds of sugar, and ½ ounce of citric acid; boiling and straining the syrup formed. Am. Journ. Pharm., 1873, p. 99.

Syrup of Eucalyptus.—100 grammes of the cut leaves are macerated in 1 litre of boiling water, in a covered vessel, for six hours, and expressed. The infusion is decanted from the sediment, and in every 100 grammes of it, 190 grammes of sugar is

dissolved, in a covered vessel placed in a water-bath. Am. Journ. Pharm., 1872, p. 393, from L'Union Pharmaceutique, 1872.

Aromatic Syrup of Galls is recommended by Dr. H. T. Bond to be prepared by percolating ½ ounce of galls, in moderately fine powder, and 2 drachms each of cinnamon and mace, with sufficient diluted alcohol to make 8 fluid ounces of percolate, which is evaporated at a gentle heat, and mixed with 2 ounces each of caramel and water. The author suggests that this is an improvement upon the formula in general use; but it can only be considered an improvement from an economical point of view, if there is any virtue in cognac brandy over diluted alcohol. Am. Journ. Pharm., 1872, p. 389.

Spiced Syrup of Galls is prepared by percolating ½ ounce of galls, and 2 drachms each of cinnamon and nutmeg, with brandy, until 6 fluid ounces of tincture is obtained. To this is added 6 drachms of glycerin; the mixture is evaporated at a temperature not exceeding 125° F. to 3 fluid ounces, is then filtered, and mixed with 6 fluid ounces of syrup.

Spiced Syrup of Kino.—From 1 drachm each of cinnamon, cloves, and nutmeg, 1 fluid ounce of tincture is prepared by percolation; 6 drachms of kino, in fine powder, is triturated with 6 fluidrachms of glycerin, then with 26 fluidrachms of water, and filtered. In this solution 7 ounces of sugar is dissolved by gentle heat, it is strained while hot, allowed to cool, and mixed with the aromatic tincture.

Spiced Syrup of Cranesbill.—From 3 ounces of geranium root, 1 pint of tincture is obtained by percolation with dilute alcohol. From 1 drachm of cinnamon, and ½ drachm each of cloves and nutmeg, 1 fluid ounce of aromatic tincture is obtained. The tincture of cranesbill is boiled a few minutes, evaporated to 4 fluid ounces, and filtered; in the filtered liquid 8 ounces of sugar is dissolved by gentle heat, the syrup is strained and mixed with the aromatic tincture.

Spiced Syrup of Tannin.—Powdered cinnamon 1 drachm and powdered nutmeg ½ drachm, are percolated with dilute

alcohol, until 1 fluid ounce of tincture is obtained. 64 grains tannic acid is triturated with 7 fluidrachms of glycerin, and then with 22 fluidrachms of water, the solution is boiled for 10 minutes, filtered, and brought to the measure of 28 fluidrachms, by passing sufficient water through the filter. In this solution, while hot, 7 ounces of sugar is dissolved, the syrup is strained, and when cold, the aromatic tincture is added.

Spiced Syrup of Marsh Rosemary is prepared like syrup of cranesbill, substituting Rad. staticis for the cranesbill.

Syrup of Catechu is prepared by triturating 6 drachms of finely powdered catechu with 6 fluidrachms of glycerin, followed with 4 fluid ounces of cinnamon water, and filtering the solution, in which 7 ounces of sugar is dissolved by gentle heat, and straining the syrup while hot. Am. Journ. Pharm., May, 1873, p. 202.

Syrupus Chloroformatus is prepared by Hagar, by mixing 5 parts chloroform, 30 parts alcohol, and 450 parts of syrup. Pharm. Centralhalle, 1873, No. 4.

Syrup of Lacto-phosphate of Lime is prepared by Mr. R. Rother, by dissolving the well-washed magma of recently precipitated phosphate of calcium, obtained from 6 drachms of calcined bones, in 1½ troy ounces of concentrated lactic acid, diluting the solution so obtained to 10½ fluid ounces, with 2 fluid ounces of orange-flower water, and a sufficiency of distilled water, and then dissolve in the solution 10½ troy ounces of sugar, and strain the syrup through muslin. Pharm. and Chem. Rec., Nov. 1872, p. 247.

It is prepared by Mr. Edward Chiles, by dissolving 1 ounce of chloride of calcium and 4 ounces of phosphate of soda, separately in water, mixing the solutions, washing the precipitate, and dissolving it in 1 ounce of concentrated lactic acid. The solution is filtered and mixed with syrup to 2½ pints. Am. Journ. Pharm., March, 1873, p. 105.

Charles Ménière prepares it by dissolving 1 gramme white lactate of sodium, and 4 grammes soluble acid phosphate of

calcium, in a small quantity of water, mixing the solution with 395 grammes syrup, and flavoring with essence of lemon. Rép. de Pharm., 1873, p. 37; Am. Journ. Pharm., May, 1873, p. 221.

Syrup of Iodide of Iron was found by Mr. Remington to deposit crystals of *iodide of lead*, and he attributes the presence of lead to impurity of the iodine. Mr. Umney found the same impurity when crude iodine was used; while Mr. Williams, who had also observed a lead deposit, attributed its presence to impurity in the iron. Chem. and Drug., Feb. 1873, p. 48.

Syrup of Ferric Phosphate with Ammonium Citrate is prepared by R. Rother, by dissolving 17½ troy ounces of phosphate of sodium in 2½ pints of water by the aid of heat; precipitating with this solution, from 1 pint of solution of tersulphate of iron, a magma of phosphate of iron, and dissolving this magma by the aid of heat, in sufficient solution of citrate of ammonium, made so as to represent ½ troy ounce of citric acid in a fluid ounce. About 6 fluid ounces of the solution of citrate of ammonium is required to completely dissolve the phosphate; the solution is concentrated to 20 fluid ounces, and 24 troy ounces of sugar dissolved in it while hot: Pharm. and Chem. Rec., July, 1872, p. 145.

Aromatic Syrup of Phosphate of Iron, Quinia, and Ignatia, is claimed by Dr. C. G. Polk to possess the advantage over the syrup of phosphate of iron, quinia, and strychnia, in keeping better, although it is less transparent. 15 drachms of sulphate of iron is dissolved in 3 ounces of boiling water, and mixed with a solution of 3 ounces of phosphate of sodium, in 5 ounces of water; the mixture being effected in a well-stoppered porcelain bottle, thus excluding both light and air. The precipitate is washed with water upon fine muslin, until the washings cease to indicate sulphate, is then rapidly subjected to pressure, and dissolved in a solution of 2 ounces of glacial phosphoric acid, in 15 ounces of distilled water. Six drachms of sulphate of quinia is then precipitated by ammonia, and the well-washed precipitate is dissolved in the acid

solution of iron. To the solution so obtained, 4 ounces deodorized alcohol, 3 ounces saturated tincture of ignatia (prepared by percolating 24 ounces of finely powdered ignatia with 16 ounces of alcohol), 20 ounces of sugar, and 20 drops each of oil of caraway and cardamom are added, and the syrup finished without heat. Am. Journ. Pharm., 1872, p. 530.

Syrupus Ferri et Strychniæ et Ammoniæ Phosphatis is proposed by Dr. C. G. Polk. See Am. Drug. Circ., Feb. 1873, p. 41.

TINCTURES.

Tincture of Kino.—Mr. L. Myers Connor advises the use of carbonate of magnesia to prevent the gelatinization of tincture of kino. One and a half ounces each kino and dry sand, and 1 ounce of carbonate of magnesia, are rubbed together and percolated with dilute alcohol until 1 pint of tincture has passed. Prof. Maisch suggests that kinotannic acid may possibly be removed by the use of carbonate of magnesia. Amer. Journ. Pharm., June, 1873, p. 260.

(When the ingredients of the Pharmacopœia are employed, your reporter has never observed the tincture to gelatinize, although this often resulted when made according to the Pharmacopœia of 1850, which directed dilute alcohol. The tincture is readily made by powdering the kino quite fine, triturating with the proper quantity of the officinal mixture of alcohol and water, and shaking vigorously for perhaps half an hour, then filter.—C. L. D.)

Tincture of Opium.—Laudanum, which has been filtered clear, gradually separates a deposit if kept in a cool place, which, at a slightly elevated temperature, gradually redissolves. Tinctures of opium should, therefore, be kept at the ordinary temperature, or if they become turbid in a cool place, should not be filtered until they have been kept some time in a warm room. N. Jahrb. f. Ph., Sept. 1872.

Tinctura Eucalypti Globuli is prepared by Dr. Lamatch by macerating 3 parts of the fresh leaves for fourteen days in

alcohol, of specific gravity 0.892, expressing and filtering. The exotic leaves are preferred, although Prof. Munster has found leaves from E. globulus, raised by him, to possess valuable medicinal action. Apoth. Zeit., 1872, No. 38.

L'Union Pharmaceutique, September, 1872, gives the following formula for tincture of eucalyptus: Eucalyptus leaves, dried and cut, 1 part; alcohol, of 80 per cent., 5 parts. Digest for six days and filter.

Tincture of Calabar Bean.—Mr. R. Rother prepares it by macerating 16 troy ounces of Calabar bean in No. 50 powder, with a mixture of ½ fluid ounce of acetic acid and 3 pints of water for three days in a warm place. He then adds 3 pints of strong alcohol and macerates a few days longer, expresses the mixture, packs the residual Calabar bean in a percolator, percolates with the expressed liquid, followed by a mixture of equal measures of strong alcohol and water, until 8 pints of percolate is obtained. Pharm. and Chem. Record., Sept. 1872, p. 201.

Tincture of Rhubarb is recommended to be prepared by R. Rother by percolating the officinal quantities of rhubarb and cardamom with a mixture of 2 volumes of strong alcohol and 1 volume of water; obtaining 21 fluid ounces of percolate, and diluting this with water to measure two pints. Such a tincture represents all the constituents soluble in water and alcohol. Pharm. and Chem. Record, Dec. 1862, p. 269.

Tincture of Fresh Orange-Peel of the British Pharmacopœia being essentially a flavoring agent, Mr. Charles Symes argues that it should be prepared from the fresh peel, thinly cut from the fruit. 6 ounces of such peel, weighing when dry 2 ounces, is cut small, macerated for forty-eight hours with 4 ounces of distilled water; 12 ounces of rectified spirit is then added, and the maceration continued, with occasional agitation, for one month. It is then expressed, filtered, and made to measure 1 pint (Imp. meas.), with proof spirit. Pharm. Journ. and Trans., Nov. 1872.

Tincture of Quinia deposits in winter, whether made with

the tincture of orange-peel of the British Pharmacopœia, or with the tincture as above suggested. The author recommends the following method, which will insure a permanently clear preparation: Digest 6 ounces of fresh orange-peel and 2 ounces of dry peel with 4 ounces of water for forty-eight hours, add 32 ounces of rectified spirit, allow to stand one month, express, and make up with *rectified* spirit to 2 pints (Imp. measure). In this the quinia is dissolved, and a permanently clear preparation obtained. Pharm. Journ. and Trans., Nov. 1872.

Tincture of Acetate of Iron is prepared by Mr. R. Rother by dissolving 2½ troy ounces of carbonate of calcium in 2 or 3 fluid ounces of water by the aid of a sufficiency of acetic acid, adding alcohol, 4 fluid ounces, and sufficient water to make a pint; heating the solution of acetate of calcium, so prepared, gently, and decomposing it by the addition of 5½ troy ounces.

Tincture Ferri Perchlor., B. P. and U. S. P.—Mr. E. B. Shuttleworth, having prepared muriated tincture of iron by the method suggested by Mr. R. Rother, adds his testimony to its stability when prepared by that method. The presumption that the tincture of the British and U. S. Pharmacopœias are identical in strength is not based upon facts, the British tincture being about 10 per cent. stronger. Canada Pharm. Journ.

Tincture of Chloride of Iron.—R. Rother recommends the following: Dilute 17½ troy ounces of muriatic acid, specific gravity 1.16, to 2 pints, and dissolve in it gradually 1300 grains of powdered iron of commerce. When complete solution is effected, add 475 grains of chlorate of potassium, stir until dissolved; allow to stand a few minutes, and then mix with 2 pints of strong alcohol, and filter. Pharm. and Chem. Record, July, 1872, p. 154.

Bleached Tincture of Iodine.—Mr. J. R. McCullough submits the following process of W. W. Reed, M.D. (?) for preparing colorless tincture of iodine: Triturate 1 drachm of sulphite of soda to a powder, and add gradually 1 ounce of

glycerin, followed by 1 ounce tincture of iodine. Triturate gently until the mixture acquires an amber color. Pharm. and Chem. Record, July, 1872, p. 155.

WINES.

Wine of Ipecacuanha, Ph. Br.—In wine of ipecac sooner or later a brownish-yellow sediment is formed, which causes the preparation to become turbid when shaken. While some clarify the preparation by filtration, or attempt to clarify it by the addition of tartaric acid, others dispense the preparation in its turbid condition. Dyce Duckworth found the sediment to consist of microscopic, yellow, amorphous granules, which are soluble in solution of potassa, but insoluble in tartaric acid, acetic acid, ether, chloroform, alcohol, or ammonia. It is therefore neither starch nor glucose, as has been supposed, and it is not emetia, which would dissolve in acids or alcohol. The precipitate has an acid reaction, and a bitter somewhat aromatic taste. According to Attfield, it consists of a mixture of bitartrate of potassium and emetia in combination with an acid peculiar to ipecac. Three to four drops of solution of potassa added to a fluidrachm of the most turbid wine of ipecac will clarify it immediately. Duckworth gives as his opinion, that the precipitate forms during a fermentation of the sherry wine after the preparation is finished, by which a portion of the bitartrate of potassium is deposited, and consequently also some of the emetia, the solubility of which is dependent upon tartaric acid. Pharm. Centralhalle, 1872, No. 29.

Wine of Eucalyptus is prepared, according to a formula in L'Union Pharmaceutique, by macerating 30 parts of eucalyptus leaves, dried and cut, in 60 parts of alcohol of 60 per cent. for 24 hours, adding 1000 parts of wine, continuing the maceration for ten days, expressing, and filtering.

Wine of Myrrh as proposed by Dr. Delioux de Savignac is prepared by macerating for ten days 20 grammes of picked myrrh, and 15 grammes of rind of Seville oranges in 1½ pints

of Malaga wine. Recommended as an excellent stomachic. Amer. Journ. Med. Sci., July, 1872, p. 249.

VEGETABLE JUICES.

Succus Scapi Taraxaci.—Mr. Henry Barton recommends the juice of the dandelion flower stalks, collected in summer with the flower in full bloom, as more satisfactory than the juice of the root. Although the juice has not as much consistence as that of the root, it is much more bitter; from the presence of taraxacin, the author suggests. The flowers, constituting about 15 per cent. of the flowering stalks, were found to yield about 40 per cent. of juice, which being inferior was rejected. The stalks, which are best reduced to a pulp in a (Kent's) mincing machine, yielded by expression about 50 per cent. of juice, to which 25 per cent. of spirit was added, stored in glass bottles, and after some weeks, filtered from a very small deposit, yielding a bright liquor, which retained its characteristic taste. Amer. Journ. Pharm., 1873, p. 509; Pharm. Journ. and Trans., Sept. 1873.

German Cherry-Juice.—Dr. A. W. Miller draws attention to this article of commerce, manufactured in the neighborhood of Magdeburg by expressing the common black cherries, the consumption of which seems to be enormous. The author finds the juice to contain about 11½ per cent. of alcohol, and he points out many uses to which it is and can be adapted. See Amer. Journ. Pharm., March, 1873, p. 99.

MISCELLANEOUS SUBJECTS.

Percolation versus *Maceration.*—In a comprehensive paper upon the best methods of preparing the *tinctures* and *wines* of the British Pharmacopœia, Messrs. W. W. Stoddart and R. L. Tucker refer to over eight hundred experiments made by them. The authors strongly disapprove the old *maceration* process, which they found to be wasteful. They found the process of *percolation* most satisfactory when conducted with certain modifications of the now generally accepted methods.

The percolator should be *a simple straight cylinder without any diaphragm* whatever, the end of the tube being only covered by muslin or cheese cloth. Many reasons are given why *conical percolators* cannot work satisfactorily. Instead of packing the ingredients, as is usual, the ingredients, rather coarsely powdered, are allowed to pack themselves; the result being uniform, easy, and with a minimum loss of spirit. The table accompanying the paper showed that in many cases the tinctures prepared in this way were 2 or 3 per cent. stronger than those made by maceration or the Pharmacopœia process. Pharm. and Chem. Record, Nov. 1872, p. 252.

To Dry Bottles Quickly.—E. Zettnow recommends that bottles or apparatus, &c., be dried by first rinsing them with alcohol, then with ether, when they will dry rapidly by passing a blast of air through them. Dry air is readiest obtained for this purpose by passing the air from the lungs through sulphuric acid. A washbottle with the tubes reversed serves this purpose admirably. Amer. Drug. Circ., Oct. 1872, p. 179.

Cleansing Glass Vessels.—Mr. J. Walz recommends for the cleansing of glass vessels in laboratories, such as beakers, &c., that have contained fats, oils, and other similar organic substances, that the vessel be filled with a moderate dilute solution of permanganate of potassium, kept in contact with this until there is a deposition of peroxide of manganese, then pouring out the solution, and rinsing the vessel with a small quantity of muriatic acid. Chlorine is formed, which in its nascent state rapidly changes the organic substance into substitution products, which are soluble in the small excess of muriatic acid or in water. N. Jahr. f. Pharm., March, 1873, p. 187, from Polyt. Journ.

Silvering Iron directly by the Galvanic Method.—According to Prof. Böttger, 1 part of nitrate of silver is dissolved in 16 parts of boiling distilled water, 2 parts of cyanide of potassium is added, and when dissolved, the solution is diluted by adding a solution of 1 part of common salt in 48 parts of water. The iron to be silvered, must be free from oxides (rust), and

must be treated with nitric acid of specific gravity 1.2 for several minutes before silvering. A battery of three to five moderately strong elements is used. Arch. f. Pharm., 1872, July.

Liquid Glue, of superior quality, is prepared as follows: A solution of saccharate of lime is prepared by macerating 1 part of lime in a solution of 4 parts of sugar in 12 parts of water, shaking frequently for several days, by which nearly all the lime is dissolved; the solution thus effected is decanted from the undissolved portion, has the property of mucilage, a coat of it possessing gloss and firmness, and readily dissolves gelatin, no previous soaking being required, even old gelatin, which has become insoluble in water, being dissolved by it. Glue of any desirable strength may be prepared by varying the amount of saccharate of lime, which possesses great adhesiveness, remains liquid when cold, and does not lose its adhesive qualities as does glue prepared with acids. A small admixture of glycerin 2 to 3 per cent. is an advantage. Amer. Journ. Pharm., 1872, p. 562.

A Cement, to stop cracks in glass vessels to resist moisture and heat, is prepared by dissolving casein in cold saturated solution of borax, and with this solution paste strips of hog's or bullock's bladder (softened in water) on the cracks of glass, and drying at a gentle heat; if the vessel is to be heated, the bladder is coated on the outside, before it has become quite dry, with a paste of a rather concentrated solution of silicate of sodium and quicklime, or plaster of Paris. Amer. Journ. Pharm., 1872, p. 562.

A Cement for porcelain or glass vessels, is prepared by Ed. Liesegang, Sr., by softening ½ ounce of isinglass in distilled water, pouring off the water, covering the swelled isinglass with alcohol, and effecting solution by the aid of heat. A solution of ¼ ounce of mastich in ¾ ounce of alcohol is then added, followed by ¼ ounce of gum ammoniacum in small fragments. The whole is then well shaken, and evaporated to the consistence of thick glue. On cooling, a gelatinous mass

remains, which must be heated when applying. Pharm. Zeit., 1872, No. 55.

A Cement for corks in the apparatus for aq. chlori is prepared by O. Facilides, and is recommended by him as superior in every respect. It is composed of equal parts of a thick solution of shellac and of caoutchouc in benzin, which, being well mixed, is applied several times to the corks, allowing the previous coating to dry before applying the next. Zeitschr. d. Oest. Apoth. Ver., 1872, No. 28.

Formulas for quite a number of cements for various purposes are given in Pharm. and Chem. Rec., Feb. 1873, p. 44, from Journal of Applied Chemisty.

French Putty is prepared by Ruban, by boiling 7 pounds of linseed oil and 40 pounds of brown umber for two hours, stirring in 62 grammes of wax, and then, after removing from the fire, incorporating with it a mixture of 5½ pounds of prepared chalk and 11 pounds of white lead. A very durable and compact putty is thus formed. Pharm. Zeit., 1872, No. 84.

A Simple Quicksilver Lute is proposed by H. Karsten, in cases where tubes cannot be connected by india-rubber, corks, &c., a gas-tight junction being formed by making two tubes to be joined vertically, the lower one capable of sliding into the other; when in this position the open end of the upper or outer tube is surrounded by mercury retained in a cup, through the bottom of which the outer tube passes. The whole apparatus is readily constructed, and can be taken to pieces and put together again at pleasure. Ber. d. d. Ch. Ges., 1872, p. 282; Journ. Ch. Society; Pharm. Journ. and Trans., 1872, July, p. 48.

Corks.—To clean corks which have been used, they are soaked in water, containing 5 per cent. of sulphuric acid, for twenty-four hours, with thorough stirring. The liquid is then decanted, and the corks are washed until they no longer react acid upon litmus, when they are rapidly dried. The use of alkali, to neutralize the acid, is not advisable, as the color of the corks would suffer, which, when they are treated as

above, are not distinguishable from new corks. Pharm. Zeitschr. f. Russ., 1872, No. 14, p. 438.

Paraffin Corks are prepared by Ruschhaupt, by immersing dry corks into melted paraffin, keeping them beneath the liquefied paraffin by means of a perforated disk, which is pressed beneath with sufficient weight. The corks become saturated in the course of five minutes, when they are removed, and are allowed to drain and cool. Thus prepared they may be cut and bored like ordinary wax, are flexible, and are easily introduced into the necks of bottles, affording a very tight stopper, which is readily removed when desired. They serve an excellent purpose for alcoholic and corrosive liquids. Apoth. Zeit., 1872, No. 50.

India-rubber Corks may, according to W. F. Donkin, be readily cut or bored, if the implement is dipped into solution of caustic potassa or soda—the strength of ordinary reagent solution, or stronger. The india-rubber may be cut as readily as a common cork. In using the borer, the stopper should be held firmly against a flat surface of common cork until the borer passes into the latter, by which precaution the contraction of the diameter of the hole is avoided. Amer. Journ. Pharm., 1872, p. 561; Chem. News, Aug. 30, 1872.

Waterproof Packing Cloth, which does not break, is made by covering the fabric with a varnish prepared as follows: 2 pounds of soft (potash) soap are dissolved in water, and mixed with an aqueous solution of sulphate of iron. The washed and dried iron soap is dissolved in 3 pounds of linseed oil, in which ½ pound of caoutchouc has been previously dissolved. Amer. Journ. Pharm., 1872, p. 452, from Chem. Centralbl.

Styptic Cotton, useful as an adjunct to arresting passive hemorrhages from extensive surfaces, is prepared by Dr. Rohland by boiling cotton in solution of alum and gum benzoin, drying the cotton so prepared, and after picking, saturating it with perchloride of iron. Amer. Drug. Circ., Jan. 1873, p. 25.

Ink from Galls.—O. Facilides macerates the galls, coarsely

powdered, in water for eight days, collects upon a cloth, and pours the filtrate back upon the strainer, as fast as sufficient has collected, for two weeks. By this procedure, the greater part of the tannin is converted into gallic acid, and is then converted into ink, after boiling to destroy mould, by the addition of persulphate of iron, the quantity of which is regulated by the richness of the liquor in gallic acid. Zeitschr. d. Œst. Apoth. Ver.. 1872, No. 28.

Improved Writing Ink.—H. N. Niessen has patented a process for improving inks. To any ink that may be desirable a solution of ferrocyanide of potassium is added, and it has been found by experiment that the writing upon checks, drafts, &c., cannot be effaced by oxalic acid or other chemicals, as they inevitably form Prussian blue. Pharm. Centralhalle, 1872, No. 29.

Indulin Ink.—Coupier and Collin propose an ink made by dissolving 2 parts of the blue-black dye, manufactured by them, and called indulin, in 100 parts of water. This ink is not affected by reagents, does not affect steel pens, and does not thicken; the only objection to it, and an important one, is, that it does not penetrate the paper, and can consequently be washed off with water. This on the other hand is an advantage which fits it for school purposes, and on this account the Société d'Encouragement in Paris, has awarded the above firm a premium of 500 francs. N. Jahrb. f. Pharm., March, 1873, p. 187.

Red Indelible Ink.—When equal parts of sulphate of iron and vermilion are reduced to an extremely fine powder, carefully triturated with an appropriate quantity of linseed oil, and strained, a liquid is formed, which, according to Dr. Elsner, may be used with a quill pen for marking cotton fabrics, and is quite indelible. Apoth. Zeit., 1872, No. 52.

Ink Spots.—The removal of ink-spots from colored fabrics is best effected by a concentrated solution of pyrophosphate of sodium, which dissolves the ink slowly without affecting the color. Am. Journ. Pharm., 1872, p. 451; from N. Jahrb. f. Ph., 1872.

An Unhurtful Hair Dye is suggested by Dr. Hager, as follows: 10 parts sub. nitr. bismuth and 150 parts of glycerin are mixed in a glass vessel, and heated in a water-bath; solution of potassa is then added in small portions, and with continued agitation, until a clear solution has been obtained, to which a concentrated solution of citric acid is added, until a merely slight alkaline reaction is observed. Enough orange flower water is added to make the liquid measure 300 parts, and it is colored slightly with anilin. Am. Journ. Pharm., Jan. 1873, p. 15; from Pharm. Cent. Halle.

A new Explosive Compound.—According to Henri Violette, a mixture of equal weights of saltpetre and previously melted acetate of soda will explode with evolution of light and smoke, if the mixture is heated in a platinum vessel to 350° C. (=662° F.) The mixture may be heated to 300° C. (=572° F.) without change under ordinary circumstances, but when brought in contact with a glowing substance at that temperature, it will explode with the same facility as when heated to explosion. Pharm. Centralhalle, 1872, No. 29.

Koumiss.—Mr. James T. George furnishes the following method of preparing koumiss from mare's milk, which has been furnished him by a Russian gentleman. Take of newly drawn milk any quantity, add a little water, and incite fermentation by the addition of one-eighth part of the sourest cow's milk obtainable (at a future preparation a small portion of old koumiss), cover the vessel with a thick cloth, expose to moderate warmth, and allow to rest 24 hours, when the milk will have become sour, and a thick substance has gathered upon the top. This is beaten with the liquid by the aid of a churn-staff, until a homogeneous liquid results, the liquid is allowed to rest for some time, the beating is repeated, and the liquid then poured into a narrow churn-like vessel, in which it is agitated until perfectly homogeneous, and is then finished. The beating is necessary to the formation of spirit, none of which is formed unless all the constituent parts of the milk are in intimate contact. When properly prepared, the taste of koumiss (also called *blanda*, *syre*, *sigre*, and *airen*)

ought to be a pleasant mixture of sweet and sour. Pharm. Journ. and Trans., Jan. 1873, p. 544.

Koumys prepared in imitation of Russian koumys in Davos, Switzerland, has been examined by Suter Naef, who finds it to differ from old Russian koumys, in containing more sugar and less lactic acid. He infers that it is prepared from skimmed cow's milk instead of mare's milk, by addition of a certain percentage of sugar and fermentation with yeast. Pharm. Centralhalle, 1872, No. 27; from Ber. d. d. Chem. Ges.

II. MATERIA MEDICA.

Medicinal Vegetable Substances in use in Turkestan.—Prof. Dr. George Dragendorff has, through the agency of Dr. Petzhold, had opportunities to examine and determine a large number of vegetable medicines in use in Turkestan. They were collected by Dr. Petzhold, by the aid and advice of a prominent Mohammedan (Persian) physician, Domlamochammedu, who also furnished excerpts from his medical record, giving memoranda of the source and medicinal properties of the medicines. Dr. Dragendorff has examined thirty-three different samples, of which eighteen were positively known to the ancient authors, and this is possibly true of twelve further samples. In twenty-two, the present names remind of the names of ancient medicines, and finally, in twenty-four samples, the present Persian view of their action corresponds with those that have been perfected before and during the times of Serapion and Ebu Baithar. The author's observations induce him to believe that a comprehensive study of the Materia Medica of Turkestan will throw light upon many points in the works of the ancient Arabians, and causes him to continue energetically in the endeavor to collect further material from that source. N. Rep. f. Pharm., 1872, p. 513.

Cultivation of Medicinal Plants in Victoria, Australia.—An agricultural commission, formed in Victoria, proposes among

others the following medicinal plants, as adapted to the climate and soil of Victoria: cinchona, rhubarb, aloes, camphor, squill, aconite, hemlock, henbane, foxglove, belladonna, buchu, poppy, gentian, chirata, erythræa, jalap, juniper, licorice, uva ursi, veratrum, arnica, podophyllum, senna, taraxacum, peppermint, sarsaparilla, &c. The commission deems it desirable that the government should obtain and distribute genuine seeds of such medicinal and otherwise useful plants, and recommends the distribution of the seeds by means of advertisements. A commercial firm of Melbourne distributed by this method a large quantity of poppy seed, and received over one thousand applications. Ph. Journ. and Trans., July, 1872, p. 8.

Yield of Fresh Vegetable Drugs in Drying.—Dr. G. C. Wittstein gives the following table of the yield of dried vegetable drugs obtained from the freshly collected:

One part.		Yielded air dry.	Collected in.
Flores	Chamomillæ vulgaris,	$\frac{1}{5}$ to $\frac{1}{4}$ part.	June.
"	Convallariæ majalis,	$\frac{1}{4}$ "	May.
"	Millefolii,	$\frac{3}{10}$ "	July.
"	Primulæ veræ,	$\frac{1}{5}$ "	May.
"	Rhœados,	$\frac{1}{8}$ "	July.
"	Rosarum rubrarum,	$\frac{1}{8}$ "	July.
"	Tiliæ,	$\frac{1}{8}$ "	July.
"	Verbasci,	$\frac{1}{5}$ "	July.
Herb.	Absinthii,	$\frac{1}{4}$ "	July.
"	Arnicæ,	$\frac{1}{6}$ to $\frac{1}{5}$ "	May.
"	Belladonnæ,	$\frac{1}{6}$ "	June.
"	Cardui Benedicti,	$\frac{1}{4}$ "	August.
"	Centaurii minoris,	$\frac{1}{6}$ "	July.
"	Conii maculati,	$\frac{1}{7}$ "	June.
"	Digitalis,	$\frac{1}{4}$ "	May.
"	Farfaræ,	$\frac{1}{6}$ "	May.
"	Majoranæ,	$\frac{1}{4}$ "	July.
"	Malvæ sylvestris,	$\frac{1}{6}$ "	June.
"	Menthæ crispæ,	$\frac{1}{6}$ "	July.
"	Menthæ piperitæ,	$\frac{1}{4}$ "	July.
"	Millefolii,	$\frac{1}{6}$ "	June.
"	Tanaceti,	$\frac{1}{6}$ "	June.
"	Taraxaci (cum Radice),	$\frac{1}{6}$ "	May.
"	Trifolii fibrini,	$\frac{1}{6}$ "	May.
"	Veronicæ,	$\frac{1}{4}$ "	June.

One part.	Yielded air dry.	Collected in.
Radix Bardanæ,	1/7 part.	May.
" Calami,	1/3 "	April.
" Consolidæ majoris,	1/5 "	May.
" Polypodii,	2/3 "	April.
" Scrophulariæ,	1/6 "	May.
" Tormentillæ,	1/3 "	May.
Stipites Dulcamaræ,	3/7 "	March.
Turiones Pini,	1/3 "	May.

Zeitschr. d. Œst. Apoth. Ver., 1872.

ALGÆ.

Laminariæ.—Dragendorff describes a sample of a drug, used medicinally in Turkestan, and there called *Tscharim Dorö*, which he states is, without a doubt, a species of tangle, containing iodine, together with portions of algæ, probably Phycoseris crispa, Krg., and *Chordaria filum*, Agh. It is used in Turkestan as a remedy for goitre, and its use is so mentioned by the ancient Arabian physicians.

FUNGI.

Ergot.—Dr. L. Enders has met with ergot in the European markets, which proved to be ergot of barley instead of ergot of rye. It was recognized by portions of the barley shell, which was still attached to some of the ergot; but it differed in no other respect from ergot of rye. Arch. d. Pharm., July, 1872.

Boletus Cyanescens has been examined by Dr. H. Ludwig, with a view to the determination of its peculiar coloring matter. A fresh fracture of this peculiar fungus appears perfectly white, but soon assumes an indigo-blue color. By macerating a portion of the fresh mushroom in alcohol of 92 per cent. for about two weeks a brown-yellow tincture was obtained by expression and filtration. From this the alcohol was distilled and the residue evaporated to a thin syrup, and was determined to contain coloring-matter which produced an intense indigo-blue coloration with hypochlorite of sodium, while with an aqueous extraction of the residue a brown color was

produced. By further concentration of the alcoholic extract under the receiver of an air-pump an abundance of crystals of *mannite* was obtained. The mother liquor was drained from these and mixed with absolute alcohol and ether, when a tough, sweetish, acrid matter was deposited, leaving a golden-yellow solution, which upon evaporation left an amorphous substance, reacting, in this condition, intensely greenish-brown with hypochlorite of sodium. Archiv. d. Pharm., Feb. 1872.

Dr. Phipson believes that this fungus contains some phenyl derivative like the *Boletus luridus*, the coloring matter of which he attributes to the presence of phenylamin (anilin). Chem. News, June 28, 1872.

Pachyma Cocos.—This curious fungoid, which, according to Mr. D. Hanbury, is found attached to the roots of fir trees, and occurs in South Carolina, and parts of China and Japan, has been offered in the London markets, according to Mr. E. A. Webb, as *China root.* Like many strange things that are from time to time offered, Mr. Webb thinks it probable that it has been sent to see if there is any use for it. From accounts which have been published it is used in China in a variety of complaints, and as an article of food. In America it has also been used as food, whence it is called Indian bread. Pharm. Journ. and Trans., 1873, p. 763.

LICHENS.

Cetraria Islandica, Ach.—Theodor Berg has by his investigations upon *lichenin* and the *iodine bluing substance* contained in Cetraria islandica, proven the fallacy of the usual acceptance of the constitution of lichenin. *Lichenin*, as obtained by the usual methods, contains a substance which is blued by iodine; when perfectly pure, however, it does not possess this property, simply possessing the property of gelatinizing, which, on the other hand, the iodine bluing substance is devoid of. Three samples of Iceland moss containing each 20 per cent. of lichenin, contained besides 10 per cent., 11.5 per cent., and 11.5 per cent. of iodine bluing substance. The most practical method to obtain the pure lichenin is to boil the Iceland moss repeatedly with water, until the decoction no longer

affords a precipitate with alcohol or is blued by iodine. Upon allowing the mixed decoctions to stand 24 hours, the lichenin separates in gelatinous form, is removed by straining and expressing, and is purified by washing with distilled water until neither the gelatinous mass or the washings give a blue color with iodine. The lichenin now only contains mechanical impurities, from which it is purified either by solution in moderately concentrated muriatic acid and precipitation by 95 per cent. alcohol, or by making a very dilute boiling aqueous solution, filtering, and allowing to cool. The lichenin is dried, after thorough expression (and washing, when HCl is used), at a temperature of 40° C. (104° Fahr.) at first, and finally at 100° C. (212° Fahr.).

The liquid remaining after the separation of the lichenin from the decoction, contains the *iodine bluing substance.* This is obtained by concentrating the liquid to a small bulk, and mixing it with an equal volume of alcohol 85 per cent. It is separated in flakes, which settle and unite to form an adhesive, tough mass. As the liquid contains also the bitter principle of cetraria, it is necessary to wash the precipitated substance with alcohol until the bitter principle is completely removed. When dried the iodine bluing substance forms a porous, friable mass, which readily dissolves in water, forming a clear light-yellow solution. The two substances are isomeric in their composition, which corresponds to that usually given in text-books for lichenin. They are not converted into sugar by the action of diastase, but may be so converted by boiling with dilute mineral acids, the iodine bluing substance being converted more rapidly than the lichenin. The two substances seem to be incapable of conversion one into the other, and are distinguished by their behavior to iodine, by their respective insolubility and solubility in cold water, &c. Pharm. Zeitschr. f. Russ., 1873, No. 5–6.

GRAMINACEÆ.

Triticum Repens, Linn. The rhizome of couch grass has been examined by Prof. H. Ludwig and H. Mueller, who

found it to contain (1) a sugar (fruit sugar), turning polarized light strongly to the left; (2) a sugar rotating to the left (not cane-sugar); (3) a peculiar left rotating gum, copulated in a peculiar manner with nitrogenated compounds, and yielding, by splitting, left-rotary sugar; (4) sweet compounds intermediate between this gum and fruit sugar, and copulated with nitrogenated compounds. Amer. Journ. Pharm., 1872, p. 353, from Arch. d. Pharm., 1872.

PALMACEÆ.

Elais Guinensis.—Nallino found the kernels of cocoanuts to contain 67.85 per cent. of oily fat (extracted by bisulphide of carbon), 24.8 per cent. of cellulose and other organic substances, and 5.80 per cent. of water, and to yield 1.35 per cent. of ashes. Apoth. Zeit., 1872, No. 38.

Palm Oil, which in Great Britain is largely used as a lubricant for wheels of railway carriages, has by Mr. Ch. A. Cameron been found adulterated to an enormous extent. Samples were examined containing 42.60, 47.48, 60.22, 68.80, 73.42, and 73.58 per cent. of water, besides more or less tarry matter insoluble in ether. Pharm. Journ. and Trans., Oct. 1872.

MELANTHACEÆ.

Veratrum Album.—H. Weppen, prompted by the observations of Prof. Flückiger, that an extraction of white hellebore root tastes bitter after the alkaloids have been removed, has experimented with a view to the isolation of this principle, and has succeeded in this, obtaining an exceedingly hygroscopic, apparently readily changeable, amorphous bitter principle, which he believes to be a glucoside, and proposes to name *veratramarin.* After numerous preliminary experiments, the author adopted the following for its isolation: The root is extracted with lime-water, containing some milk of lime by maceration. The alkaloids of the white hellebore are thus rendered insoluble, and are retained by the root. The filtered solution was treated with carbonic acid to remove excess of lime, and again filtered: the filtrate was precipitated by sugar

of lead, which the author finds does not precipitate the bitter principle, but enables the removal of gum, &c., with advantage. The solution filtered from the precipitate obtained with sugar of lead, was allowed to stand several days, and was found to deposit upon the sides of the vessel *warty crystalline masses*, to favor the further deposition of which it was allowed to stand eight days longer. The clear liquid was readily poured off, precipitated with basic acetate of lead, the amorphous precipitate was washed, suspended in a small quantity of water, decomposed by HS, filtered, heated to expel HS, precipitated with tannic acid, and the precipitate so obtained again washed, and while in a moist condition, mixed with pasty hydrated oxide of lead, and dried. The dried mass yielded to 40 per cent. alcohol the bitter principle in question, which was obtained dry by distilling off the alcohol, and exposing the aqueous residue over sulphuric acid. The new principle is exceedingly soluble in water, more soluble in dilute than in strong alcohol, and insoluble in ether, chloroform, benzole, and petroleum ether. Owing to the small quantities obtained, the author was unable to make more comprehensive experiments. The author believes that this bitter principle constitutes a certain portion of the yellow coloring matter of Pelletier and Caventou. The *warty crystalline masses* deposited from the liquor containing the bitter principle, after the addition of neutral acetate of lead, were found to be a lead compound of a new acid, which the author proposes to name *jervic acid*, and which he feels confident is identical with the acid observed by Pelletier and Caventou, but which they erroneously called *gallic acid*. It is true that the acid possesses some resemblance to gallic acid, and that by superficial examination it might be regarded as such. Experiments made, however, with larger quantities subsequently obtained, convince the author that the acid in question possesses properties which distinguish it perfectly, not only from gallic acid, but also from all others that have been so far described. Its composition is $C_{14}H_{10}O_{12} + 2H_2O$ ($O = 16$). (See Organic Acids, in this report.) Arch. f. Pharm., Feb. 1873, pp. 101–124.

SMILACEÆ.

Smilax China.—Dr. Oscar Th. Sandahl has carefully examined various samples of China root, and finds that it is erroneously called a *rhizome*, with which it is true it has some resemblance. In reality it is a *tuber*, the specimens examined by him leaving this beyond a doubt. Regarding the plant which yields the China root of commerce, the author states that *Smilax China*, Lin., has not been identified by modern botanists, and it is probable that Linné described *Smilax ferox*, Wallich, which abounds in the mountainous districts of India and China; he believes that the plant producing the China root must be sought for among the six species of Smilax mentioned by Bentham in his Flora Hongkongensis, one or more of which probably yield the commercial article. N. Jahr. f. Pharm., Feb. 1873, p. 81, from Nordiskt Medicinsk. Archiv.

Mr. E. A. Webb draws attention to a parcel of a drug offered in the London markets as *China root*, but which in reality was nothing more than that curious fungoid production which has been called *Pachyma cocos*, and has been described by Mr. Daniel Hanbury in a paper entitled Notes on Chinese Materia Medica. It is curious that as the old writers and naturalists considered this production to be a species of China root, it should now be offered on the markets as the same thing. It may readily be distinguished from true China root by its general appearance, and by its containing no starch. Pharm. Journ. and Trans., 1873, p. 763; see also Pachyma Cocos.

LILIACEÆ.

Scillæ.—Dr. W. H. Pile stated before the pharmaceutic meeting of the Philadelphia College of Pharmacy, November, 1872, that fresh squills formerly appeared in American commerce, and that the vitality of the bulbs was preserved by keeping them in sand in a cellar. The fresh squills being, in the countries whence we derive our supplies of dried squills, invariably preferred to the latter, it was suggested that the plant might be cultivated in some of the Southern States, and

a fresh supply thus easily obtained. Amer. Journ. Pharm., 1872, p. 522.

Asphodelus Ramosus, L.—The tuber, called *Schiresch* in Turkestan, is there employed as a diuretic and emmenagogue. The ancient Arabian physicians employed it for a similar purpose, and against the bites of venomous animals. Dragendorff in N. Rep. f. Pharm., 1872, p. 522.

IRIDACEÆ.

Orris Root, which, according to Mr. Henry Groves, is derived chiefly if not exclusively from a small district in the neighborhood of Florence, Italy, the plants yielding it being I. florentina, I. germania, and I. pallida, yields by distillation, according to Umney, an exceedingly small amount of essential oil, resembling a fatty substance, similar to cacao butter, and possessing all the aroma of the root. It is even more costly than attar of roses. Amer. Journ. Pharm., 1872, p. 518.

X. Landerer has repeatedly observed phosphorescence on digging the rhizome of Iris florentina at night; it occurred in the form of luminous spots. Amer. Journ. Pharm., Feb. 1873, p. 70; Wittstein Viert. Schr., 1873.

AMOMEÆ.

Curcuma Zedoaria, Roxb.—The central and lateral tubers of this plant are used, according to Dragendorff, medicinally in Turkestan, where they are called *Katschul.* N. Rep. Pharm., 1872, p. 540.

ARISTOLOCHIACEÆ.

Aristolochia Recurvilabra, Hance.—Amongst the drugs held in high estimation by the Chinese is one, which from some fancied resemblance to the rhizoma of *Auklandia costus*, Falc. (see Aplotaxis lappa, in this report), is called by the Chinese *Ch'ing muh hsiang, i. e.*, green putchuk, and is largely imported by them for the purpose of making incense sticks, &c. The plant abounds on the slopes of hills in the Hu-peh prov-

ince, is trailing, has leaves and fruit like those of *Ma tao ling* ("Horse-head bells"), and small, fragrant, yellow roots. It is employed medicinally for the cure of burns and indigestion. Dr. H. F. Hance has had opportunity to examine the plant, and decides that it is an undescribed *Aristolochia*, which he names *A. recurvilabra.* The immediate allies of the Chinese plant are to be found in those species which inhabit the region of the Mediterranean basin, among which *A. altissima*, Desf., *A. pistolochia*, Linn., *A. bœotica*, Linn., and *A parviflora*, Sibth. et Sm., are the nearest related. Dr. Hance makes some remarks upon the supposed antidotal properties of the *Aristolochiæ*, and Mr. D. Hanbury adds some statistics upon the trade in *green putchuk*, which in the East Indies and China seems to be quite important. Pharm. Journ. and Trans., March 15, 1873, p. 725.

LAURACEÆ.

Laurus Nobilis.—M. A. Doran claims febrifuge and antiperiodic properties to laurel leaves, which are administered in gramme doses in form of fine powder macerated for ten or twelve hours in a glass of cold water. The green leaves are prepared by drying them at a gentle heat in a closed coffee-roaster, to avoid loss of volatile constituents, until they become brittle, but without undergoing alteration. Pharm. Journ. and Trans., Dec. 1872, p. 488.

Camphor.—According to Bechtinger, a colony of Chinese in the island of Formosa gain a poor livelihood by the preparation of camphor. They use a large furnace of clay, into which they introduce a large clay cylinder divided into three superimposed compartments. The lower of these compartments is filled with water, and the middle one, communicating by small orifices with both the others, is filled with camphor-wood chips. When the fire is lighted, the steam rises through the middle compartment, and carries the camphor into the upper compartment, in which it crystallizes. The product is sent to Bangka, and thence to China by the port of Tamsui. Pharm. and Chem. Record, Jan. 1873, p. 17, from Journ. de Pharm. et de Chim., Oct. 1872.

Dr. H. Hager proposes the following method for the quantitative determination of camphor in complex mixtures: The alcoholic solution, containing besides camphor, also volatile oil, extractive, &c., is subjected to distillation; the distillate, containing the greater portion of the camphor, is diluted with an equal volume of water, then shaken with $\frac{1}{10}$th volume of bisulphide of carbon, and allowed to separate. The bisulphide of carbon solution is removed, and the residue returned to the still and subjected to distillation in a glycerin bath, towards the end at a temperature of 110° C. (230° Fahr.). The second distillate is again agitated with bisulphide of carbon, which is removed as before, and this aqueous liquid is shaken twice more with bisulphide. The mixed bisulphide of carbon, containing all the camphor that had been in the mixture, is allowed to evaporate at a temperature of 5° to 10° C. (41° to 50° Fahr.), at which temperature but an insignificant amount of the camphor is volatilized, while any essential oil present is carried off with the bisulphide. If the oil is largely present, the residue in the capsule may be moistened several times with CS_2, allowing to evaporate after each moistening. Pharm. Centralhalle, 1872, No. 50.

Sophora Japonica, L.—The flowers, called *Tuchmach*, are used in Turkestan as a yellow dye. The drug is obtained from China, and is there called chuay-choa and chuay-ozu. Dragendorff, in N. Rep. Pharm., 1872, p. 521.

POLYGONACEÆ.

Rhubarb.—Prof. Baillon communicated a paper upon the botanical origin and character of the officinal rhubarb, to the Society for the Advancement of Science, at Bordeaux, from which it appears that the fine officinal rhubarbs, which are known by the names Russian and Chinese rhubarb, are the product of a single botanical species, growing in Thibet, in about the 40th degree of latitude, in deserts which have heretofore been looked upon as vast plateaus of sand, but which are really inaccessible citadels, formed of superposed stages of perpendicular rocks, the craggy buttresses of which have but

seldom, and then with difficulty, been scaled by Europeans. Some stalks of the plant, yielding the officinal rhubarbs, were obtained in 1868 by M. Dabry, were sent to M. Soubeiran, and reached him in a partially putrefied state; some shoots, however, having been found intact by M. L. Neumann. These shoots have produced some plants, of which the following description is given:

"The leaves are about a metre and a half in length, of which the limb, a little broader than long, is orbicular, deeply five-lobed and incised, cordate at the base, pale green, glabrous above, densely covered underneath with a fine white down, which does not alter the green tint. In the inflorescence, the bracts are about two metres in length, ramified, foliate, bare at the summit, and are surmounted by numerous cymes of whitish flowers, which are remarkable for the depth of their concave receptacles and the green color of their disks. The aerial portion of the axis of this plant, for which the name Rheum officinale is proposed, is a thick, short, ramified stem, while the subterranean portions are cylindrical, of small size (and therefore of little practical use), and easily destroyed, from which cause it is rarely, and in but small portion, imported into Europe."

This is the reverse of what is found in the European rhubarbs, of which the fuller developed root is the part used, while in Thibet, the part principally employed is the aerial stem, whence also the peculiar characters of the drug as found in commerce. It is characterized by its color, smell, and taste, and by the numerous starred spots which are observed in sections of certain portions. The pretended black bark which is removed in cleaning the rhubarb, is nothing but a mass of leaf-bases and ochreas, which cling to the surface of the stem. The radiated spots in rhubarb are really transverse sections of adventitious roots, which penetrate from the base of the root into the parenchymatous mass of the stem, where they appear as a pith of medullary rays, with triangular portions of parenchyma and wood interposed. This makes it practically possible always to distinguish the rhubarb consisting of the cauline portions from those consist-

ing of the roots. Pharm. Journ. and Trans., Oct. 1872; Am. Journ. Pharm., 1872, p. 546.

A sample of rhubarb, such as is used in Turkestan, and which is probably obtained from *Rheum leucorrhizum*, Pall., was found by Prof. Dragendorff to be of very inferior quality indeed. It consisted of pieces, some of which were peeled, while others were not; was very light, internally spongy, poor in oxalate of lime, feebly bitter, very mucilaginous, and contained but little cathartic acid. N. Rep. Pharm., 1872, p. 547.

CHENOPODIACEÆ.

Chenopodium Quinoa.—The seeds of this plant, containing nearly 40 per cent. of exceedingly minute starch-granules, upwards of 5 per cent. of sugar, 7½ per cent. of casein, and 11 per cent. of albumen, have for many years been used in Peru and Chili as food, and have not long since been procured from Peru and sent to India, in order to secure their introduction for the purpose of food in the Himalaya region. Mr. M. C. Cooke, in a paper describing the botanical character, habits, culinary uses, &c., of the plant, states that in Arequipa, besides the varieties called Colorado, Amarilla, Blanca, Real, Ccosccossa, Uchacachi, Ccancolla, and Ccoylo, a bitter-seeded variety, "Amarga," is also cultivated, chiefly in gardens and in small quantities. The seeds of this variety are used medicinally, in the form of decoction and cataplasm, for sores and bruises, and internally as a substitute for quinia. The bitterness seems to be confined to the husks, or testa, of the seeds, and may be removed by digestion in a dilute solution of carbonate of sodium, and afterwards washing. It has not been determined to what principle the bitterness is to be attributed, or what is the real medicinal value of the red quinoa. Amer. Journ. Pharm., 1872, 557; Pharm. Journ. and Trans., Oct. 1872.

PLANTAGINACEÆ.

Plantago Ispaghula, Roxb.—The seeds of this plant, called Ispaghul, are used in Turkestan, in the form of infusion,

against diarrhœa. The seeds of *P. major*, L., and of *P. lagopus*, Sibth., are mentioned by the ancient Arabians as being useful in diarrhœa, and as a cooling astringent. They are also used in Persia and Tartary to make a cooling drink. Dragendorff, in N. Rep. Ph., 1872, 519.

SCROPHULARIACEÆ.

Gratiola Officinalis, L.—The seed is used in Turkestan, where it is called Kisil Jousuruck, against nausea and vomiting, and as a purgative. Dragendorff, in N. Rep. Ph., 1872, 530.

Clandestina Rectiflora.—In early spring the poplars and willows in some portions of France are surrounded with the flowers of this plant. These are large, irregular, of a violet color, and possess a pleasant odor. F. A. Harsten found the budding flowers, which are characterized by an acrid taste, to contain a crystallizable stearopten, obtainable along with sugar, fatty matter, &c., by extracting them with ether. The stearopten is colorless, transparent, crystalline, soluble in alcohol and ether, insoluble in water and dilute muriatic acid, may be sublimed like camphor, and is by the author named *clandestinin.* The plant is a parasite, and takes root in the roots of the above-mentioned trees. The roots are bitter, and probably contain salicin. The branches are covered with white, spongy scales, which at the extremities serve as bracts. The fruit is remarkable from the fact, first observed by the author, that it ejects its seed with remarkable force when ripening. Chem. Cent. Bl., 1872, No. 33.

SOLANACEÆ.

Solanum Lycopersicum.—Mr. George W. Kennedy has searched for and found solania in the tomato plant; leaves and stems. He also found it to contain oil, gum, chlorophyll, and inorganic salts. Amer. Journ. Phar., Jan. 1873, p. 8.

Hyoscyamus Niger.—E. B. Shuttleworth has had collected for him in the neighborhood of Toronto, Canada, a quantity of the flowering herb of Hyoscyamus niger, which is found in

some portions of Canada upon waste places, and prepared from the fresh herb extract of hyoscyamus, according to the process of the British Pharmacopœia. From 225 pounds the product weighed 7½ pounds, which is equal to 3.33 per cent. of the fresh herb. The resulting extract was similar to that of the best samples of English manufacture, but had a rather more fetid odor. English operators state the results to be much higher; Brande giving 4 to 5 pounds from 112 pounds of the fresh herb, while Squire has obtained 4 pounds 10 ounces from 70 pounds. Can. Ph. Journ., 1873, July, 415.

Belladonna—Herbalists of Madrid have offered for sale and sold for belladonna, a plant which is not belladonna at all, and does not even belong to the Solanaceæ. It is called in the Madrid markets "belladonna silvestre de la casa de Campo," and is, botanically, the *Cucubalus bacciferus*, L., abounding in humid situations in European forests, and especially among the underbrush of the casa de Campo, and other portions of the province of Madrid. Its botanic characters readily distinguish it from true belladonna. N. Rep. Ph., 1872, 421.

Atropa Mandragora, L.—The root is known in Turkestan as Sirauvandi Tavil, and is there used medicinally for rheumatism, stiff neck, &c. In the quaint language of a native physician, "When taken internally one sweats, and gets no lice;" from which it appears to act diaphoretic. The ancient Arabians employed it as an anæstheticum, and externally to pain in the limbs, inflammation of the eyes, boils, hard swellings, goitre, erysipelas, &c. Dragendorff, in N. Rep. Ph., 1872, 543.

OLEACEÆ.

Olea Europæa.—The culture of the olive tree and manufacture of the oil from its fruit, is gradually becoming a leading industry in California, and it is predicted that a portion of the State, especially the valley of Santa Barbara and the foothills of Santa Inez, will eventually be numbered among the most productive oil districts in the world. The olive is propagated almost exclusively by cuttings, which are generally

ten to fifteen inches long, and from half an inch to three or four inches thick, and are taken from the sprouts and branches of the mature trees at the time of pruning. After they have properly matured, they are taken up, with as little disturbance of the roots as possible, and after being trimmed to a single sprout, are set out in the orchard in rows, about twenty-five feet apart each way. The ground may be cultivated for several years with little detriment to the young trees. At five years of age, the young trees afford a slight recompense for the care, and at seven an orchard should yield about twenty gallons of berries to the tree. The berries are gathered on cloths spread under the trees, and are pulled down by hand or beaten off with a long rod. When intended for oil, they are spread on the floor of a loft or upon drying-frames, and by this exposure to a dry indoor atmosphere, they ripen further, their watery juices evaporate, and the oil, being released, flows more readily under pressure. A slight mould which may gather upon them is not injurious, but may be prevented by stirring them daily. The process of extracting the oil, as practiced at Santa Barbara, is exceedingly simple: A large stone wheel is made to traverse a circular bed of solid stone, the berries are thrown upon the bed, and are constantly shovelled in the line of the moving wheel, until considerably mashed, but not until the stones (of the olives) are broken. The pulp is then wrapped in coarse cloths or gunny sacks, and subjected to pressure in a rude screw or lever press, the oil and juices being collected in a small tank, from which they are distributed into other vessels. From there the oil is skimmed after a time, and is ready for commerce without any further preparation. The average yield of oil from twenty gallons of berries is, if properly managed, about three gallons. Am. Journ. Pharm., 1872, p. 455; from Scientific American, Sept. 1872.

Some valuable statistics upon the varieties of olive growing or cultivated near Ventimiglia, Italy, are furnished by Mr. L. Winter, in a letter to Mr. Daniel Hanbury. The *Olivastro*, the wild olive, Olea Europæa, grows quite sponta-

neously, reproducing itself by seeds and suckers; the varieties *Pignuole*, *Columbaïre*, and *Spagnuole*, reproduce themselves by seed, but not as freely as the Olivastro; while the varieties *Nilane* and *Punginaïre*, do not reproduce themselves by seed, returning to the Olivastro, such being the prevalent opinion of the people, although no regular experiments seem to have been carried on.

The propagation of olive trees belonging to the last-mentioned varieties, is effected by cleft-grafting on the stem of the Olivastro, about six inches above the ground. When the scion has taken, earth is heaped around it so as to stimulate it to shoot out roots. After three or four years the little tree begins to fruit, and when arrived at the age of twenty or twenty-five years, the roots which have been drawn out by the graft, send up suckers which, when about two years old, are strong enough to bear separation, and are planted as independent trees. Such young trees bear fruit three to five years after planting.

The quality of the oil, from cultivating olives, depends upon the maturity of the fruit; the riper it is, the better will be the oil it yields. Am. Journ. Pharm., 1872, p. 458; from Pharm. Journ. and Trans., 1872.

It has been observed that rich harvests of olive oil occur, with tolerable regularity, every third year, in the countries supplying the Smyrna export market. The oil grown in the interior of Asia Minor, while of very handsome deep-yellow color, is said to be inferior to that grown near the coast, which is greenish in color. The expression of the oil is still conducted in very rudely constructed wooden presses, which I. M. Stœckel thinks would be advantageously supplanted by the iron presses, in use in Italy and Spain, from which the oil flows purer, and requires less time to clarify. N. Rep. Pharm., 1872, p. 562.

Luigi Moschini found that olive oil, bleached by exposure to sunlight, does not alter its specific gravity; if now treated with sulphuric acid (specific gravity 1.63), it is colored red-yellow, not greenish; by nitric acid or caustic soda, it acquires

a whitish instead of a green or light yellow color. Exposed to the sunlight in open vessels for one month, the oil continues to congeal under the influence of nitrous acid, but after two or three months the oil remains liquid, even if treated with a solution of nitrate of mercury saturated with nitrous acid. The bleached oil has a strongly acid reaction, a somewhat rancid odor and taste, and dissolves anilin red easily, acquiring a deep color. Normal olive oil containing a yellow principle, which is colored green by acids, and which is decomposed by sunlight, so that neither acids nor caustic soda produce the characteristic reaction, it follows that the usual tests for oils are apt to mislead, as does also the anilin test. Am. Journ. Pharm., 1872, p. 300; from Chem. Centr. Bl.

Renard detects and estimates groundnut oil in olive oil, by saponifying 10 grammes of the oil, decomposing with HCl, dissolving the fatty acids in 50 c.c. of 90 per cent. alcohol, and precipitating with acetate of lead. The precipitate is exhausted with ether to remove oleate of lead, the solid fatty acids obtained by boiling the residue with HCl and cooling, are dissolved in 50 c.c. alcohol of 90 per cent., and cooled. If groundnut oil be present, abundant crystals of arachidic acid will form in the liquid. These may be removed and washed, first with alcohol of 90 per cent., and then with such of 70 per cent., and then dissolved in boiling absolute alcohol, received in a tared dish, evaporated to dryness and weighed. Since pure groundnut oil contains 4.5 to 4.98 per cent. of arachidic acid, it is easy to calculate the amount of this oil present. The method is capable of detecting an adulteration of even 4 per cent. Am. Journ. Pharm., 1872, p. 541; from Compt. Rend., 1872.

Manna.—Mr. Daniel Hanbury has determined, by information obtained during a journey in Calabria, that Calabrian manna has practically ceased to exist as an article of commerce, and that its collection in that part of Italy is on the verge of extinction. Trifling quantities are still gathered in one district by the peasants. During a visit to Sicily, the author had opportunities to inspect the tree yielding the

manna from that source in several localities, and to examine herbarium specimens from all parts of the island. He concludes that *Fraxinus rotundifolia* cannot be distinguished from *F. ornus*, and that there exists no special cultivated form of the manna ash. Pharm. Journ. and Trans., Nov. 1872, p. 421; Pharm. and Chem. Rec., Nov. 1872, p. 251.

Mentha Piperita.—Shuttleworth has found American oil of peppermint adulterated with castor oil and alcohol, and such adulteration is difficult to detect without direct examination. The author found 32.72 oil of peppermint, 38.18 castor oil, and 29.10 alcohol. Its specific gravity was somewhat lower than that of the genuine oil (0.894); but it reacted with iodine the same as the genuine, and was like it perfectly dissolved by alcohol of specific gravity 0.838. The adulteration is recognized by leaving a greasy stain upon filtering-paper, and by losing a portion of its volume when agitated with water. Apoth. Zeit., 1872, No. 46; N. Jahr. f. Pharm., 1872.

Mentha Australis.—A true mint abounding in Victoria, New South Wales, South Australia, and Tasmania. One hundred pounds of the fresh herb yielded 1.00 to 3.00 fluid ounces of volatile oil to Bossisto and Johnson, who found it to differ scarcely from ordinary oil of peppermint, except that it is somewhat coarser than the best samples of that article.

M. grandiflora was found by them to yield 5.00 fluid ounces of volatile oil from 100 pounds of fresh herb. The oil has a fiery, bitter, and unpleasant taste, and characteristic aftertaste. Specific gravity 0.924.

M. gracilis was found to yield from the same quantity of fresh herb 3.00 fluid ounces of volatile oil, which in its general properties resembles that from *M. Australis* more closely than that of *M. grandiflora*. Its odor resembles that of oil of peppermint with a slight admixture of pennyroyal. Specific gravity 0.914. C. Hoffmann in Proc. Montreal Coll. Pharm., Feb. 1873.

Lavandula Vera.—Some interesting facts in relation to the cultivation of lavender, and the distillation of its oil in the

district of Beddington, England, will be found in the American Journal of Pharmacy, 1872, p. 510. About two hundred acres are under cultivation. The lavender is planted in autumn in rows, and after the first year's harvest, which takes place in August, the plant has attained such dimensions, that it becomes necessary to remove every alternate row, and every alternate plant in the row. The cutting is done with a sickle, and if not properly done, affects the future crop. The lavender is then immediately tied up in mats to protect it from the sun's rays, and the distillation is carried on upon the spot, in stills capable of containing from a half to one ton of the herb, placed in brick-built sheds. The stills, being filled tight to the top with the herb, liquor is allowed to flow in from the worm-tub, which although cold at the bottom, is boiling hot upon the surface; the furnace is then set to work, and the commencement of the distillation closely watched, that being the most critical stage of the process, resulting occasionally in the carrying over into the worm of a portion of the solid contents. As soon as distillation commences, termed bringing over of the still, the furnace is immediately damped. The run requires about eight hours, three runs being made in twenty-four hours. The yield from a ton of herb averages 15 to 16 pounds, reaching occasionally, but seldom, 21 pounds, and sometimes not more than 10 pounds. The distillation is carried on from August to October.

Origanum Vulgare.—The oil of origanum exported from Smyrna is, according to Stœckel, obtained by distillation from origanum vulgare when flowering. It is thin, liquid, of a red-yellow color, bitterish aromatic taste, and is consumed exclusively in Germany and Austria for medicinal purposes. N. Rep. Pharm., 1872, p. 561.

Salvia Sclara, L.—The fruit of this plant, erroneously supposed by Palen to be the fruit of Cannabis sativa, is known in Turkestan as *kanapscha*, and is used, owing to its mucilaginous character, as poultices on inflamed swellings. It was known to the ancient Greeks, who employed it to make eyewaters. N. Rep. Pharm., 1872, p. 542.

Ocymum Basilicum.—A fruit called in Turkestan *Tuchmi reihau*, is by Burge believed to be the fruit of sweet basil. It is used in India to form a cooling drink for febrile complaints, affections of the brain, &c., and in Turkestan for similar purposes. It was known and had been used by the ancient Arabs. N. Rep. Pharm., 1872, p. 535.

Prostanthera Lasianthos, Labillardière.—Hab. Tasmania, Victoria, and New South Wales. One hundred pounds of the fresh leaves yielded to Bossisto and Johnson 2.60 fluid ounces of a limpid, greenish-yellow volatile oil, possessing a mint-like odor, and mild mint-like taste. Specific gravity 0.912. The volatile oil was also distilled from *P. rotundifolia;* hab. same as above (?). One hundred pounds of fresh herb yielded 12.00 fluid ounces of a volatile oil corresponding with the above mentioned, with the exception that it is somewhat darker, and has a specific gravity of 0.941. C. Hoffmann in Proc. Montreal Coll. Pharm., Feb. 1873.

HYDROPHYLLACEÆ.

Cordia Myxa, L.—The fruit called in Turkestan *sapistan*, is there employed as a cough remedy for hoarseness, as a diuretic, &c. It was used for like purposes by the ancient Arabs, and is used medicinally in Southern Russia.

APOCYNACEÆ.

Strophanthus Hispidus, D.C.—Fraser throws some light upon the arrow-poison prepared by the Kombè near the equator on the west coast of Africa. His examinations render it probable that the poison is prepared from the fruit of a variety of Strophanthus, perhaps S. hispidus, D.C. The plant is a climber, abounding upon the mountains, and in the valleys in various localities near the coast, and in the interior. It climbs upon the highest trees, and like the grapevine, extends from one tree to another. The stem is very rough and several inches in diameter; it flowers only a short time, producing pale yellow flowers. The fruit, of which the inner surface and seeds are used, ripens in June, and Fraser found

an alcoholic extract of it to act similarly to the antiaria poison (from Antiaria toxicaria). This leads the author to infer identity with the arrow-poisons *Inè* or *Onage*, from the Gaboon districts, and also with the arrow-poisons used in Guiana and Senegambia. The poisonous principle has been isolated by the author, who has not yet published its chemical characteristics, but proposes to name it Strophantin. Zeit. d. Œst. Apoth. Ver., 1873, p. 7.

STYRACEÆ.

Storax.—By subjecting storax to fractional distillation, Dr. A. Laubenheimer has obtained, among other products, one that corresponds very closely to benzyl-alcohol. The product was obtained at the boiling-point of benzyl-alcohol, yielded by the action of nitric acid a product having the odor of oil of bitter almonds; when oxidized by bichromate of potassium and sulphuric acid, an acid was obtained which corresponded very closely to benzoic acid, and in its ultimate composition it corresponded very closely to benzyl-alcohol. Zeitsch. d. Œst. Apoth. Ver., 1873, No. 1.

Mr. Otto Facilides recommends that storax be mixed with an equal part of oil, and after gently heating, strained, in which form it is best used in the treatment of scabies of adults. To modify its effects when used on children, the author recommends its admixture with an equal part of a mixture of hard-boiled yolk of egg and ung. glycerinæ. Zeitschr. d. Œst. Apoth. Ver., 1872, No. 28.

Benzoin.—Experiments made upon eight different samples of benzoin, by Mr. A. E. Curtis, warrant him in the following conclusions: 1. That considerable cinnamic acid is found in much of the benzoin of our markets. 2. That when benzoin is subjected to sublimation, benzoic acid sublimes almost free from cinnamic acid, and that benzoic acid is therefore best prepared by sublimation. 3. That cinnamic acid is obtained pure for all practical purposes, by boiling benzoin with twice its bulk of lime, in forty times its weight of water, for fifteen or twenty minutes, filtering, cooling, acidulating strongly

with muriatic acid. 4. That some benzoin in the market contains as much as 25 per cent. of impurities, and therefore, that unless allowance is made for such, its pharmaceutical preparations are correspondingly deficient. Am. Journ. Pharm., 1872, p. 485.

ERICACEÆ.

Arctostaphylos Glauca, Lindley.—The leaves of the manzanita plant, which is closely related to uva ursi, and abounds in California, principally upon the Sierras, have been examined by Mr. John Henry Flint. The author was successful in obtaining arbutin from the leaves, which contain also 9⅘ per cent. of tannin. Water dissolves 42 per cent. of extract from them. Am. Journ. Pharm., May, 1873, p. 197.

Gaultheria punctata and G. leucocarpa abound, according to De Vrii, in Japan, upon the summits of several volcanoes. The recent leaves of the first yield 0.012 per cent., of the last-mentioned, however, 1.15 per cent. of volatile oil. In both plants the author found kinic acid, the occurrence of which renders the relation of the plants to *Vaccinium myrtillus* probable. Chem. Cent. Bl., 1872, No. 28; from N. Jahr. Ph.

COMPOSITÆ.

Lactucarium and Thridacium.—L. Buttin has made the following comparative experiments of French lactucarium (from L. sativa), German lactucarium (from L. virosa), and thridacium (obtained by expression and evaporation of the juice of L. sativa):

One hundred parts.	German Lactucarium.	French Lactucarium.	Thridacium.
Ashes,	10.63	7.50	33.90
Soluble in alcohol, 80 per ct.,	46.66	46 85	39.50
Soluble in water,	48.88	21.42	Complete.

The difference in the solubility in water of the two varieties of lactucarium, and the large quantities of ashes of the thridacium, are noteworthy. Pharm. Centralhalle, 1872, No. 48.

Lactucarium is readily pulverized if it is heated gently in

a mortar, mixed thoroughly with two parts of sugar, and after cooling, thoroughly triturated. The powder obtained will keep readily, and will, when agitated with liquids, form very uniform mixtures.

Taraxacum, which, as is well known, is one of the most extensively distributed plants upon our globe, is valued so highly in India, that it is there cultivated. Of the two varieties abounding in the Himalayas, one a small, the other a large, flowering variety, the latter is most valued, and is the one cultivated, its roots being gathered from September to February. The roots are used in the form of a paste, obtained by mashing the fresh roots and heating slowly in an oven. It is also used as an addition to coffee, the roots for this purpose being cut, dried, toasted, and added to the coffee, in proportion of 1 to 9. Zeitschr. d. Œst. Apoth. Ver., 1872, No. 22.

Aplotaxis Lappa.—Mr. John R. Jackson states that the plant, described by Dr. Falconer as *Auklandia Costus*, and which grows upon the mountain slopes of the Cashmere Valley, at an elevation of 8000 to 9000 feet, is now referred to as *Aplotaxis Lappa*. The aromatic root, which is considered to be the *Costus* of the ancients, is used in Cashmere for preserving the celebrated Cashmere shawls from the attacks of moths, pieces of the root being put into the bales in course of packing. When dry the root is of a dark-brown color, very brittle, apparently full of resin, and of a strong agreeable odor, similar to that of orris root. It is used by the Mohammedans as an incense, by the Chinese also as an aphrodisiac. In Cashmere it is known as *Koot*, in Bengal as *Putchuk*. Pharm. Journ. and Trans., March 15, 1873, p. 723. (See also Aristolochia recurvilabra in this report.)

Spilanthus Oleracea.—This plant, abounding in India, where it is sometimes cultivated for use as a salad, on account of the peculiar pungent taste of its leaves, is used by the natives, according to Colonel Pears, with success, for the relief of the toothache. It is an erect branching annual, growing about twelve to fourteen inches high, and having small yellow flower-buds at the ends of the branches. It contains an acrid

principle, and when chewed causes a copious flow of saliva. In India it is known as Parà grass; in Japan it is called Ho Ko So. Am. Journ. Pharm., 1872, p. 323; from Med. and Surg. Rep.

Grindelia hirsutula and Grindelia robusta, recommended by Dr. C. A. Canfield as an antidote to the poisonous effects of *Rhus toxicodendron*, is a tall, stout perennial, abounding in the neighborhood of Monterey, California. It flowers from June to October, producing bright yellow flowers, one or two inches in diameter, which look like small sunflowers. Before flowering, the unexpanded buds secrete a quantity of resinous matter, white and sticky, that is finally, after the flower expands, distributed over the petals, &c. The whole plant—flowers, leaves, and all—is resinous and viscid. When it grows on dry hills, it is stiff and rigid, with narrow, thin leaves; but in damp localities it is more robust and succulent, with wide, fleshy leaves. (For the mode of using, see Rhus toxicodendron in this report.) Am. Drug. Circ., April, 1873, p. 75.

Solidago Bicolor.—Mr. Adam Conrath has examined the flowers of Solidago bicolor. The dried flowers yielded to dilute alcohol 17 per cent. of extract. The flowers extracted by ether yielded to cold water 13.8 per cent. of extract, and when extracted by alcohol, 12 per cent. He found them to contain tannin, glucose, resin, and volatile oil. The resin is bitter, is partly soluble in ether, little affected by bisulphide of carbon, and freely soluble in alcohol. It was present to the amount of 2.13 per cent. The volatile oil was obtained in minute proportions, possessed a peculiar but pleasant aromatic odor, was yellow, and lighter than water. Am. Journ. Pharm., June, 1873, p. 253.

Oil of Chamomile.—By his studies and experiments J. Kohler arrives at the conclusion that the blue oil of chamomile and the blue oil of galbanum are identical. Although the analytical results do not give convincing proof of this, the following reactions seem to the author sufficient evidence: When oil of chamomile is treated with potassium, the product dissolved in ether, and then an ethereal solution of bromine is

added, the liquid assumes when shaken an azure blue color, which, as the ether evaporates, changes to green, and finally to brown. Precisely the same reaction takes place when oil of galbanum is subjected to the same test, or when the product of either oil obtained by the action of anhydrous phosphoric acid upon them, is used. A similar color-reaction is also produced when these products are agitated with common nitric acid. The brown color first produced is soon changed to a deep violet-red, which, however, in the course of time disappears, owing to the oxidizing action of the acid. Pharm. Centralhalle, 1872, No. 30.

Tanacetum Vulgare.—Merletta has obtained from the flowering tops of Tanacetum vulgare a crystallizable acid—*tanacetic acid*—which is said to possess vermifuge properties, and to act in the same doses like santonin (see Tanacetic Acid in this report).

RUBIACEÆ.

Cinchona Culture.—The efforts of the Portuguese to acclimatize the cinchona in their Asiatic and African possessions, in 1865, and the subseqent efforts to cultivate saplings obtained from the Kew Gardens, in the botanical gardens of Lumiar and Coimbra, having failed, Mr. Edmund Goetze, Director of the University Garden of Coimbra, has succeeded in raising some very vigorous plants from seed sent to him by Mr. J. W. Hooker, Director of the Kew Gardens, London. The great waste of the Peruvian, and other native cinchonas, as also the enormous consumption of quinia, render it eminently necessary that every effort should be made to acclimatize this important plant wherever it is feasible. To the Dutch, the credit of first acclimatizing the tree seems to be due. As early as 1829 they made efforts to introduce the tree in Java, which has since proven to unite all the conditions necessary to its proper growth and development. The first successful effort was made, however, in 1848; in 1854 the culture had already made considerable progress, and in 1859 the plant had so far advanced that fruit and seed could be collected. The British efforts were at a late date, 1860, and in 1867 the

plantation in the Neilgherrys, under the care of MacIvor, had improved remarkably, and were in the best possible condition. At present, in the Ghants, extensive forests of cinchonas are to be found, while in Java the forests are of no less extent. B. A. Gomes, in Journal de Sociedade das Scienc. Med. de Lisbon, 1872, No. 4; N. Rep. Pharm., 1872, p. 418.

Cinchona Cultivation in the Rungbee (Rungjo) Valley, in British Sikkim.—The following is gleaned from the tenth annual report of Mr. George King: The trees of *C. succirubra*, of which the plantation mainly consists, are in a state of health which on the whole may be considered satisfactory, many of the older trees being indeed extremely healthy and vigorous. *C. officinalis*, the species yielding the crown bark of commerce, has not answered well in any part of Sikkim, a large proportion of the plants having died out, and *succirubra* substituted for them. *C. Calisaya* promises to do well, but from the difficulty of propagating the species artificially, the progress made has hitherto been slow. The cultivation of *C. micrantha*, *C. nitida*, and *C. Peruviana*, yielding gray bark, which, while rich in other alkaloids, is found to be poor in quinia, has been practically abandoned for some years. During the past year 166,285 plants of *C. succirubra*, and 44,500 of *C. Calisaya*, have been added to the permanent plantation, and nearly 116,000 pounds of green bark (equal to about 39,000 pounds of dried bark) have been collected from prunings and thinnings alone, not a single tree having been cut for the sake of its bark alone. Pharm. Journ. and Trans., Oct. 1872, pp. 302-4 and 324-25.

Cinchona.—At the suggestion of Mr. Broughton, the Government Quinologist at the Ootacamund Plantation, India, a manure consisting of equal weights sulphate of ammonium and guano was applied to trees of *C. succirubra* and *C. officinalis* in 1869. In January, bark of *C. succirubra* so manured was found to contain 7.25 per cent. total alkaloids, 2.45 per cent. being quinia; while unmanured bark contained but 4.89 per cent. total alkaloids, 1.78 per cent. being quinia. Manured with guano alone it yielded but 5.29 per cent. total alkaloids.

The experiments with *C. officinalis* did not show quite the same increase with the combined ammonia and guano manure, but showed a somewhat higher increase with guano alone, and in both instances the percentage of quinia was much higher; while trees which had been manured with common farmyard manure from 1867 to 1872 yielded a percentage of 7.49 per cent. combined alkaloids, and 7.15 per cent. was pure quinia. Pharm. Journ. and Trans., Jan. 1873, p. 521.

Mr. Julius Jobst has analyzed several varieties of cinchona barks grown in Java, and recently imported. He finds that the external appearance of the barks indicates a remarkable progress in their growth. While the first importations had generally a very dull appearance, among the last importations *C. Calisaya* and *C. Hasskarliana* possess a strength, color, and characteristically fissured appearance of the quills, which remove all doubt as to the success of the cinchona cultivation in India. While the barks mentioned are not yet the equals of the quilled Calisaya of the Andes, they are fully equal, in their external appearance, to the best varieties of Huanuco bark. In their appearance, the barks of *C. succirubra* and *C. officinalis* showed less favorable comparison, probably because of younger growth.

C. Calisaya occurred in quills 20 centimetres long, ½ to 1½ centimetres diameter, 2–3 millimetres thick; was externally gray to gray-brown, had but few lichens attached to its epidermis, which also presented very faint transverse fissures, and no longitudinal wrinkles, but was profusely covered with warts; while internally it was reddish-yellow, possessed an even fracture, and a bitter taste. It was found to contain

Quinia, . . .	1.10 per cent. (= 1.49 per cent. sulphate).
Cinchonidia, . .	0.48 per cent.
Conchinia, . .	0.12 per cent.
Cinchonia, . . .	0.83 per cent.
Amorphous base, .	1.86 per cent.
Total, . . .	3.39 per cent.

C. Hasskarliana, in quills 20 centimetres long, 1 to 2 centimetres diameter, 4 to 5 millimetres thick, externally whitish-

gray, scantily coated with lichens, few longitudinal furrows, but in part well marked by transverse fissures; while internally it was yellowish-red, of tolerably even fracture, and of bitter taste. It was found to contain

Quinia,	0.50 per cent.	(= 0.68 per cent. sulphate).
Cinchonidia,	0.81 per cent.	
Conchinia,	0.11 per cent.	
Cinchonia,	0.42 per cent.	
Amorphous base,	0.68 per cent.	
Total,	2.52 per cent.	

C. Officinalis, in quills 20 centimetres long, ½ to 1½ centimetres diameter, 2 to 3 millimetres thick, generally double-quilled, of a brown to gray-brown color, the epidermis profusely covered with warts, and peculiarly wrinkled, without longitudinal furrows, but occasionally very deep transverse fissures; inner surface brown-yellow, the fracture even, the taste bitter. It was found to contain

Quinia,	1.90 per cent.	(= 2.58 per cent. sulphate).
Cinchonidia,	0.99 per cent.	
Conchinia,		
Cinchonia,	0.28 per cent.	
Amorphous base,	0.61 per cent.	
Total,	3.73 per cent.	

C. Pahudiana, in quills 20 centimetres long, 1 to 1½ centimetres diameter, 2 to 3 millimetres thick, mixed with flat, concave pieces, of a gray to gray-brown color, scantily covered with lichens, without transverse fissures, but exhibiting longitudinal furrows; red-yellow on inner surface, tolerably even fracture; astringent, subsequently bitter taste. It contained

Quinia,	0.13 per cent.	(= 0.18 per cent. sulphate).
Cinchonidia,	1.17 per cent.	
Cinchonia,	trace.	
Amorphous base,	0.77 per cent.	
Total,	2.07 per cent.	

C. Succirubra.—The samples were composed of very small quills of a very young, immature bark, without longitudinal

furrows or transverse fissures, brown externally, tolerably dark internally, and possessed a faint bitter taste. Owing to the small quantity obtained it was not subjected to analysis.

Comparing the results of his examinations and analyses with those of 1870, the author concludes that, while the barks have improved materially in their externals, they have, with the exception of C. pahudiana, not improved in their alkaloidal strength. N. Rep. f. Ph., 1872, 322.

Cinchona Succirubra.—From the bark of *C. succirubra*, cultivated in British India, O. Hesse has obtained, besides relatively large quantities of quinidia and some quinia, *a new alkaloid*, which the author names *Chinamina*. (See Alkaloids, in this report.) Pharm. Centralhalle, 1872, No. 27, from Ber. d. d. Chem. Ges.

Ipecacuanha.—Dr. George King, in his report of the Royal Gardens of Calcutta, refers to the progress of the experiment which is now being made to propagate the ipecacuanha plant in India. While the climate of Calcutta seems to be unsuitable to the propagation of the plant, that of the Sikkim Himalaya seems to meet all the demands, and the propagation is there now carried on by the European gardeners having charge of the cinchona plantations, a small valley near Sookna having been taken up as an ipecacuanha reserve. Pharm. Journ. and Trans., Oct. 1872, 328.

UMBELLIFERÆ.

African Ammoniacum.—It has long been a matter of dispute whether or not ammoniacum was produced in Africa. Mr. Daniel Hanbury proves conclusively that African ammoniacum exists, and contributes among other points the following: The drug consists of large, compact, heavy masses, formed of agglutinated tears of a gum resin of hard, waxy consistence. The tears are opaque, white, and milk-like, or of a pale greenish-yellow, or of a fawn color, mixed with others of a dark blackish-brown, which with earthy and vegetable impurities constitute a large proportion of the mass. The drug has a weak odor not suggestive of ammoniacum,

and slightly acrid but not persistent taste. By the aid of Mr. Moryoseph, a London drug merchant, the author has succeeded in obtaining direct from Morocco some African ammoniacum of better quality, which proved to be less impure, and to contain milky tears exactly like Persian ammoniacum. Further information through Dr. Leared is to the effect that the plant yielding the gum resin is called *Keeth*, and grows up rapidly after the first rains. Its gum is not much shipped to Europe, but a great deal of it is taken by pilgrims to Egypt and Mecca, where it is used as incense. Its chief shipping port is Mazagan; a little is sent from Mogador, but none from other ports. These facts show that African ammoniacum is still an object of commerce, and that it is consumed not only in Morocco, but that it finds its way even to Egypt and Arabia. It can hardly be doubted that this traffic is very ancient, and that the ammoniacum which the ancients describe as brought from Lybia is identical with that still collected in Morocco. Pharm. Journ. and Trans., 1873, p. 741.

Mr. John Moss, in a paper supplementary to that of Mr. D. Hanbury, gives the result of his examination of African ammoniacum supplied by Mr. Hanbury. African ammoniacum softens between the fingers more readily than does the Persian, and does not, like the latter, become orange-colored with solution of chlorinated lime. It does not contain any sulphur. The results of the author's experiments are summed up in the following table, and compared with the results of Hagen with Persian ammoniacum:

	African Ammoniacum.	Persian Ammoniacum.
Resin,	67.76	68.6
Gum,	9.014	19.3
Bassorin and insoluble matter,	18.85	
Water and volatile oil,	4.29	2.8
Gluten,		5.4
Extractive,		1.6
Sand,		2.8
	99.914	100.0

Ibid., p. 742.

Persian Ammoniacum.—Works on Materia Medica occa-

sionally stating that there is no sulphur present in Persian ammoniacum, it is apt to be inferred that according to some other authority it does exist. To settle this question definitely, Mr. John Moss has made appropriate experiments which conclusively prove that ammoniacum *does not contain sulphur.* Ibid., 1873, p. 761.

Ammoniac.—Ch. Ménière has observed a falsification of ammoniac, which consists of globular pieces of translucent quartz, varying in color between white, yellow, orange, and reddish, imbedded in the gum resin, so as to give it the appearance of a handsome article. It is calculated to deceive unless closely inspected. Amer. Journ. Pharm., Feb. 1873, p. 71; Journ. de Pharm. et de Chim., Dec. 1872.

RANUNCULACEÆ.

Hydrastis Canadensis.—Mr. A. K. Hale, in precipitating *hydrastia*, after removing *berberina*, obtained a yellow powdery substance, along with the hydrastia, which he at first supposed to be berberina; but repeating the experiment in a manner that precluded the presence of berberina, he still obtained this yellow powder, and he is inclined to believe that he has discovered a third alkaloid. It resembles berberina in many respects, but differs again in others quite decidedly. See Amer. Journ. Pharm., June, 1873, p. 247.

Coptis Trifolia.—The herb of Coptis trifolia has been subjected to examination by Mr. Edward Z. Gross, who finds the following constituents: Resin, albumen, fixed oil, coloring matter, extractive, lignin, sugar, berberina, and *coptina.* The latter is a colorless, crystalline substance, possesses alkaline properties, and in fact seems to resemble *hydrastia* very closely. The author, however, finds it proper to call it coptina, until further developments are made. The herb yields 4 to 5 per cent. of ashes, which contain silica, carbonic acid, iron, aluminium, calcium, magnesium, and potassium. It contains neither tannic nor gallic acid. Amer. Journ. Pharm., May, 1873, p. 193.

Isopyrum Thalictroides.—The root of this plant, of frequent occurrence in the shady forests of the Pyrenees, has been analyzed by F. A. Harsten, who has found it to contain two alkaloids, which he proposes to name *Isopyrina* and *Pseudo-isopyrina.* Chem. Cent. Bl., 1872, No. 33.

MAGNOLIACEÆ.

Michelia Champaca, Linn.—Mr. P. L. Simmonds furnishes some additional information in regard to this plant. It is a native of the Indian Islands, cultivated in Bengal and the gardens of the Peninsula of India for its large yellow fragrant flowers. The tree is highly venerated by the Hindoos, and is dedicated to Vishnoo. It is celebrated for its exquisite perfume, which is so powerful, according to Sir W. Jones, that bees will seldom if ever alight upon them. The flowers of another species, *M. Rheedii*, growing in Malabar and Travancore, boiled in oil, are applied in headaches and affections of the eyes. Pharm. Journ. and Trans., Jan. 1873, p. 572.

BERBERIDACEÆ.

Berberis Vulgaris, Linn.—Graeger found in 100 parts of recently collected, ripe barberries, exclusive of the stalks, 15.58 integuments and seeds, 17.20 soluble solid constituents, and 67.22 of water. The constituents of the juice, calculated from 100 parts of fresh berries, are 5.92 of malic acid, 4.67 of sugar, 6.61 of gum, 67.16 of water, and 0.06 of salts of potassium and calcium. Amer. Journ. Pharm., Jan. 1873, p. 14, from N. Jahr. f. Pharm.

ZYGOPHYLLACEÆ.

Resin of Guaiacum.—The researches of E. Schaer develop that the constituent of crude guaiac resin, which produces the blue coloration with oxidizing agents, is *guaiaconic acid*, and that it constitutes 70 per cent., and that another resin is present, *guaiaresinic acid*, to the amount of 10 per cent., which is not colored by oxidizing agents. The blue color produced with pure guaiaconic acid is of longer duration, if the oxidiz-

ing agents producing it, after parting with oxygen, form bases or indifferent compounds, like permanganic and ferric acid, &c., and it is readily changed if the oxidizing agents produce acids, as for instance Cl, Br, I, &c., &c. Subjected to the influence of light, a molecular change is produced, even if oxygen is carefully excluded, and it loses its property of turning blue with oxidizing agents. The green coloration assumed by wood and resin on exposure is due to the presence of yellow coloring matter in addition to guaiaconic acid. Amer. Journ. Pharm., Feb. 1873, p. 69; Wittstein, Viert. Schr., 1873.

PITTOSPORIACEÆ.

Pittosporum Undulatum.—Hab. Victoria and New South Wales. One hundred pounds of the freshly gathered blossoms yielded to Bossisto and Johnson, 2.1 fluid ounces of a volatile oil, of an exceedingly agreeable odor, resembling the perfume of jasmine flowers. Its taste is disagreeably hot and bitter. C. Hoffmann, in Proc. Montreal College Ph., Feb. 1873.

MALVACEÆ.

Althæa Officinalis.—The bark of a root called *Bechi Badean*, in Turkestan, is regarded by Dragendorff to be very closely allied, if not identical, with that of A. officinalis. The bark, from which the woody particles are carefully removed, is very rich in mucilage and starch, as also in oxalate of lime. It finds in Turkestan the same application to the treatment of diseases as did the althæa by the ancients and during the Middle Ages. N. Rep. f. Ph., 1872, p. 543.

A. Ficifolia, Cav.—Its flowers are used in Turkestan to form cataplasms for inflammatory swellings, and in the form of decoction "against heat." It is called *Gulli chairu.* Dragendorff, Ibid., 572.

Cotton-root Bark.—Experiments, by Professor E. S. Wayne, upon cotton-root bark, lead him to suppose that the peculiar red deposit, which forms in the fluid extract so readily, is produced by a chemical change occurring upon a principle

peculiar to the drug. This principle he has, however, not succeeded to isolate in its unchanged form. In its changed form it possesses acid properties, and is resinous in its character. It is obtained by evaporating a tincture made with 76 per cent. of alcohol, separating the resinous matter from the residue, reducing it to a fine powder, washing it with water as long as anything is taken up by it, drying and reducing it to fine powder. In this form it has the appearance of powdered cochineal, is soluble in solutions of potassa and soda, but insoluble in alcohol, chloroform, ether, and aqua ammoniæ. Am. Journ. Pharm. 1872, p. 291.

Zieria Lanceolata.—Hab. Victoria, New South Wales, and Tasmania. One hundred pounds of the fresh leaves and branchlets yielded to Bossisto and Johnson, 6.5 fluid ounces of a pale yellow, limpid oil, of an odor and taste scarcely distinguishable from that of oil of rue, specific gravity 0.950. C. Hoffmann, in Proc. Montreal Col. Ph., Feb. 1873.

BOMBACEÆ.

Helicteris Isora, L.—A fruit, named in Turkestan, *Machmili Petschon*, and employed there medicinally, in the form of decoction, against diseases of the joints and diarrhœa, and in India and Persia against colic, is determined by Dragendorff to be the fruit of an Helicteris, in all probability H. isora. N. Rep. f. Ph., 1872, p. 530.

STERCULIACEÆ.

Cacao.—Duclaux has found that cacao beans constantly contain copper, although the proportion is very minute. The kernels contain quantities varying between 0.0009 and 0.0040 per cent., while the shells contained as high as 0.0250 per cent. The author also examined a number of chocolates, and of course found copper in all of them. The experiments as conducted by the author, preclude the possibility of an introduction of copper by means of the apparatus employed. The author also gives some useful hints in regard to the treatment of the platinum vessels used in conducting the determi-

nation. Bullet. de la Societ. Chim. Inst., Sept. 1872, p. 33; Vierteljahrsch. f. Pharm., 1873, April, p. 255.

VITACEÆ.

Red Wines.—In France and some wine regions of Germany, the red wines not unfrequently undergo a peculiar spontaneous change, by which they acquire bitterness and become unfit for the purposes of beverage. Professor C. Neubauer finds that this change is accompanied by the formation of groups of sprouting yeast-cells, accompanied by crystals of tartar and amorphous red-colored masses. Upon standing, a considerable deposit of a red-brown color is formed, and the wine becomes lighter in color. The author's experiments have shown that wine, having undergone this change, contains less coloring matter and tannin, and that the change may be completely prevented by heating the wine to 60° C. (=140° F.). Pharm. Centralhalle, 1872, No. 49.

In a subsequent paper, Professor Neubauer details some of his experiments with reference to Pasteur's method of conserving red wines, by heating to 60 to 65° C. (=140 to 149° F.). German wines were bottled, and samples of each heated in a water-bath to the above temperature for about half an hour. The heated wines, together with samples of the same wines not heated, were submitted to experts, who decided that the heated wines had gained greatly in odor, taste, and ripeness, and that they in a very short time acquired the character of perfectly developed and healthy old wines, while those that had not been heated, already evidenced decomposition. Ibid., No. 51.

The Acidity of Wines, generally regarded to be due to free tartaric acid is, according to Hessler, only in isolated cases solely due to this acid, free malic acid being nearly always present along with it. Tartaric acid alone gives to the acidity a certain harshness, which is reduced in proportion as the malic acid is a constituent. It is owing to the use of tartaric acid in adulterated and made wines that they are so harsh, while the use of hard water in connection with tartaric

acid, gives rise to another effect not heretofore mentioned, the production of free sulphuric and hydrochloric acids, from sulphate and chloride of calcium. Pharm. Centralhalle, 1873, No. 6.

C. Kissel finds the following the best method for determining acetic acid in wines: The wine is neutralized with baryta, the alcohol distilled off, phosphoric acid added to the residue, and this subjected to distillation. The distillate contains all the acetic acid that had been contained in the wine, while when direct distillation is resorted to for its determination, it often escapes detection. Apoth. Zeit., 1872, No. 31.

The determination of acid in red wines is, according to F. Schwackhöfer, best executed by adding to the wine tincture of litmus, prepared by Gottlieb's method, then supersaturating with (normal) solution of caustic baryta, and determining, by titration with sulphuric acid, the excess of baryta employed. As the latter operation nears the point of saturation, each drop of the acid, as it drops into the liquid, produces a red zone, which is quite distinct, and the rapidity or slowness with which the red zone disappears, serves as a guide to the completion of the reaction. Zeitschr. f. Anal. Chem., 1872, No. 3, p. 331.

Ammonia in Wines.—H. Kalbrunner, by his experiments since 1864, upon a great variety of grape juices, determines the constant presence of a small percentage of ammonia, the presence of which in some wines has latterly also been observed by Vogel. It was determined by supersaturating small quantities of the juice (must) with caustic soda and testing with reddened litmus, which becoming blued, again returned to red when exposed. By using larger quantities of the juice, the odor of ammonia became perceptible, and its presence was also evidenced by the production of white fumes when a glass rod, dipped in HCl, was held near it. To prove that the ammonia pre-exists as such in the juice, and is not the product of decomposition of albumen present in it, the author has operated with magnesia, which, possessing the property of

decomposing ammoniacal salts, and not decomposing albumen, proved, by the elimination of ammonia, its pre-existence. Prof. Brücke has also drawn attention to the presence of volatile bases in *Australian wines*, while Dr. Ludwig has determined the constant presence of trimethylamina in wines, which he, however, regarded as a product of fermentation. Zeitschr. d. Œst. Ap. Ver., 1872, No. 26.

Wines—Reagents for Natural and Artificial Color of Wines.—The reagent suggested several years ago by Cottoni and Fantagini, for discriminating between natural and artificially colored wines, has by several authors been found unreliable, and Hager draws attention to this. The reagent consists of nitric acid of specific gravity 1.41, of which 6 c.c. mixed with 50 c.c. of the suspected wine and heated to 90°–95° C. (=194°–203° Fahr.), will cause the discoloration of artificially colored wines in five minutes, while with pure wine this result does not take place even after heating several hours. An author in Wittstein's Vierteljahrschrift for 1872, finds that pure wines are discolored inside of half an hour, and Stein has obtained a like result with several pure wines, while with others, among which were several artificially colored, the color was not affected. The reagent must consequently be regarded as perfectly worthless. Pharm. Centralhalle, 1872, No. 27.

Wines, Adulterations.—Mayer has observed that three kinds of claret, containing from 10 to 12 per cent of alcohol, yielded with ammonia crystals, which further analysis proved to be phosphate of calcium, and he regards this as suspicious that they may have been adulterated with cider. Another kind contained phosphate of magnesium. Am. Journ. Pharm., 1872, p. 390; from N. Jahrb. f. Pharm.

Dr. Wittstein refers to the statement of Tuchschmidt, made in 1870, which is of value in this connection: Tuchschmidt states that fruit wine yields between 0.11 and 0.40 per cent. of carbonate of lime, while grape wine never contains above 0.049 per cent. After estimating, in wine which is adulterated with cider, the lime contained therein as carbonate, the percentage of the adulteration may be arrived at approximately

from the above figures. Am. Journ. Pharm., 1872, p. 391; from Vierteljahrschr. f. Pharm., 1872.

SAPINDACEÆ.

Æsculus Pavia.—Mr. E. C. Batchelor has subjected the seeds of the *red buckeye*, to which poisonous properties is attributed in the Southern States, to analysis. The seeds, which are 1 to 1½ inch long, ¾ to 1 inch in diameter, smooth, round on one side, angular on the other, are dicotyledonous. The *testa* constitutes 17 per cent. of the seed, possesses an astringent, slightly bitter taste, and contains 3 per cent. resin, tannic acid (greening persalts of iron), red coloring-matter, and a minute quantity of white, prismatic, tasteless crystals. The *cotyledons* possess a disagreeable odor, an amylaceous, slightly sweet at first, then bitter and acrid taste, leaving a peculiar and lasting drying effect in the fauces. They contain 5 per cent. fixed oil, cane sugar, a glucoside, a peculiar tough matter, a crystallizable organic acid (in minute quantity), green coloring matter, and 12 per cent. starch. The *glucoside*, which seems to be the active principle—producing evident poisonous effect upon a cat in quantities of ½ grain—is a yellowish-brown substance, obtained in shining scales, is insoluble in ether and chloroform, soluble in alcohol, and freely soluble in water. By the action of boiling dilute hydrochloric acid it is split into glucose, and a yellow, crystalline, tasteless and odorless substance. By distillation with sulphuric acid it yields *valerianic acid.* It differs in its properties both from the *argyræscin* and *aphrodæscin* obtained by Rochleder from Æsculus hippocastanum. The seeds lose 25 per cent. of their weight in drying, and yield 2½ per cent. of ashes, which were found to contain aluminium, potassium, sodium, trace of iron, and carbonic, hydrochloric, and phosphoric acids. Am. Journ. Pharm., April, 1873, p. 145.

Paullinia Sorbilis.—The efficacy of guarana in relieving incipient headache is well established, but that it contains caffein in large proportion is not so well known. The article sold in our markets is obtained by roasting and powdering the

seeds, which contain about twice as much of the alkaloid as is contained in tea. It is regarded by some a powerful rival of tea and coffee, while others scout at the idea of its ever supplanting these favorites for the purpose of beverage. Am. Drug. Circ., Oct. 1872, p. 180.

PAPAVERACEÆ.

Opium Culture.—According to Julius Jobst, the cultivation of the poppy for its opium, in Wurtemberg, is carried on to an important extent, and the quality of the opium yielded is superior to the Oriental product, it containing from 12 to 15 per cent. of morphia. During a tour in Asia Minor, in the winter of 1871, he became convinced that the climate of Wurtemberg is in every respect as well suited to the culture of opium, as is that of Asia Minor, where, for example, it is regarded as a necessary condition to a good opium crop, that the poppy fields should be covered with snow during several months. Jobst secured a quantity of poppy seeds from the districts producing one of the most valued varieties, the Boghaditsch opium, with which he has instituted comparative experiments with the following results.

The Oriental poppy plant is of a lighter color than the indigenous poppy, has dark violet-colored flowers, remarkably few leaves, and reached a height of two feet. The capsules were small, but well filled with extremely small bluish seeds. Owing to its small growth it is not exposed to the same extent to the influence of storms, as is the taller indigenous variety, and ripens several weeks earlier. The Oriental variety yielded a little less opium than the indigenous, but the morphia strength of the two opiums was nearly the same.

Opium from Oriental seed = 12.6 per cent. morphia, 0 12 per cent. codeia.
" " indigenous seed = 12.8 " " " 0.09 " " "

In the neighborhoods of Saarau and Bohrau, Silesia, opium has been cultivated which yielded 13–14 per cent. of morphia, which is 3 to 4 per cent. more than Oriental opium yields. Arch. d. Pharm., July, 1872.

Julius Schrader has made some experiments upon the prac-

ticability of cultivating the poppy for its opium in Germany, and selected for his purpose a small tract of land, rich in lime, with the following results: From the entire number of capsules, 3749, he obtained by the usual method, incision, a quantity of opium, which when dry weighed 9 ounces and 3 drachms, and contained 11 per cent. of morphia. The amount of seed collected from 160 capsules from which opium had been collected, and from 160 capsules which had remained intact, and which had been collected as near as possible of the same size, was the same in weight in both instances, about 15 ounces, while the amount of oil obtained from each was also the same, not quite 6 ounces. These results justify the author in the conviction that good opium can be raised in Germany, at the mere expense incidental to its collection, the seed paying its usual profit. Pharm. Centralhalle, 1872, No. 26.

Dr. G. Merck raised in 1848 poppy from which he obtained opium yielding nearly 16 per cent. of morphia. Encouraged by these results, he planted, a few years later, half an acre with poppy, from which 2½ pounds of opium of good appearance and strong odor was obtained, which, however, was useless for pharmaceutical or manufacturing purposes, it yielding scarcely 2 per cent. of morphia. Two years ago he again raised opium, which yielded only 7 per cent. of morphia. The author believes that the quality of opium depends greatly on the soil, and points to Egypt, where with a warm climate, opium is produced rarely exceeding 8 per cent. of morphia. He believes that the neighborhood of Darmstadt is not adapted for opium, and that, perhaps for similar reasons, Aubergier's experiments on a more extended scale had to be discontinued. Am. Journ. Pharm., 1872, p. 488; from N. Jahr. f. Pharm., 1872.

From the report of the Chamber of Commerce of Breslau (1872), it appears that the experiments upon opium cultivation in Silesia have been discontinued, as it has become evident that, while the cultivation of the poppy for its seed is very remunerative, its cultivation for opium is unprofitable.

The yield of opium is small, and its collection causes a diminution of the seed. Pharm. Zeit., 1872, No. 74.

In the United States opium culture is also attracting considerable attention. At a pharmaceutical meeting of the Philadelphia College of Pharmacy a sample of opium collected in South Carolina, and sent by Mr. E. H. Heinitsh, was exhibited. An analysis of the opium is not given, and it is herein where our American experimenters fail to render the value of their experiments evident, a knowledge of the morphia strength of the opium being as necessary as the simple advice of the fact, that the opium has been cultivated in a particular locality. Mr. Benjamin Lillard, at the last meeting of the Association, also exhibited some opium, cultivated in the neighborhood of Nashville, Tennessee, and read a paper upon the method of its cultivation, collection, &c. The sample contained 10 per cent. of alkaloid.

Professor Dragendorff has obtained from Turkestan, two pieces of Persian stick opium and a sample of black opium, in irregular pieces. Subjected to analysis by Würthner, the two stick varieties were found to contain respectively 7.71 per cent. and 8.0 per cent. of morphia, and the black variety 8.1 per cent., showing the opium to be of tolerably good quality, and remarkably good as compared with the Persian opiums heretofore examined, which contained but 3 per cent. of morphia. N. Rep. Pharm., 1872, p. 546.

Opium Adulteration.—G. Righini received as best Smyrna opium, small cakes of about 100 grammes, carefully wrapped in leaves, of strong odor and hard consistence. Internally the cakes contained small globular bodies, paler in color, and fragments of dark green leaves, which appeared to be cut tobacco leaves, and amounted to 30 per cent. of the whole. The opium yielded 4 per cent. of morphia. Am. Journ. Pharm., 1872, p. 392, from Viertelj. Schr. f. Pharm., 1872.

E. Heintz found in various samples of opium from English sources never less than 15 per cent., sometimes over 16 per cent., and in one instance 21 per cent. of water. Chem. Cent. Bl., 1872, No. 31.

Formation of Morphia in Opium.—In view of the fact that the poppy, as it ripens, gradually loses its morphia, so that when perfectly ripe no morphia, or but traces of it remain, O. Hesse arrives at the conclusion that the substances found in opium are not originally contained in the juice, but are formed during its collection, &c. He agrees with Eatwell, who has experimented in the same direction, that the morphia strength of the juice is increased subsequent to its collection when carefully manipulated, while careless treatment will have the reverse effect. Apoth. Zeit., 1872, No. 37.

Opium Bases.—Rabuteau divides the alkaloids of opium according to their physiological action upon the animal organisms into four groups:

1. *Soporifics.* Morphia, narceina, codeia.
2. *Poisonous.* Morphia, narceina, codeia, thebaina, narcotina, papaverina.
3. *Producing insensibility.* Narceina, morphia, thebaina, papaverina, codeia.
4. *Producing costiveness.* Morphia, narceina.

Chem. Cent. Bl., 1872, No. 31.

Bouchut expresses the following opinions as to the physiological action of the opium bases. Morphia and its salts are the most active constituents of opium; next to this codeia; narceina is an inferior soporific to codeia; papaverina, injected subcutaneously in quantities of 10 centigrammes, or in internal doses of 1 gramme, is without action. Narcotina, in doses of 50 centigrammes, is neither narcotic nor anæsthetic in its action; and thebaina or meconin are, in the same doses, without action. Hence morphia and codeia are medicinally the only important alkaloids of opium. Chem. Cent. Bl., 1872, No. 31.

Sanguinaria Canadensis.—Ernest Pierpoint, in operating upon bloodroot for sanguinarina, obtained from the mass which remained after the separation of the sanguinarina by ether, some fine needle-shaped crystals, by treating it with dilute sulphuric acid and animal charcoal. These he determined to

contain, besides a small percentage of sulphate of lime, a crystalline organic substance, which he believes to be the sulphate of a new alkaloid, and which Prof. Maisch regards to be similar, if not identical with *chelidonina.* The author has also isolated *puccina*, which he believes, contrary to the usual acceptance, not to be identical with sanguinarina. Sanguinaric acid, as isolated by the author, was found to be insoluble in alcohol, and to possess an acrid taste, properties in which it conflicts with the sanguinarinic acid of Newbold, who found it soluble in alcohol, and possessing but little taste. Am. Journ. Pharm., 1872, p. 349.

PORTULACEÆ.

Portulaca Oleracea, L.—Prof. Dragendorff has examined some seeds from Turkestan, where they are called *churfa*, and finds them to correspond fully to the seeds of P. oleracea, L. They are employed in Turkestan, in the form of infusion, in the treatment of rheumatism, &c. By the ancient Arabians they were used to form a cooling drink. N. Rep. Ph., 1872, p. 524.

CRASSULACEÆ.

Sedum Acre, Lin.—The mossy stone crop, or wall pepper, was analyzed by E. Mylius, who obtained from it an alkaloid, 4.42 wax and chlorophyll, 2.20 soft acid resin, soluble in ether, 12.80 uncrystallizable sugar, 12.40 rutin, soft resin, magnesia, potassa, 30.56 mucilage, gum, and malate of lime, and 37.62 cellulose and insoluble constituents. The alkaloid is uncrystallizable, has a strong alkaline reaction, is readily oxidized in contact with air, is not volatile, and has a disagreeable, persistently acrid taste. It is readily soluble in alcohol, ether, chloroform, and acids, but little in water. Its salts are easily soluble in water, and are crystallizable. Am. Journ. Pharm., 1872, p. 487, f. Arch. d. Pharm., 1872.

CUCURBITACEÆ.

Colocynth Seeds, as an article of food, are mentioned in Pereira's Elements of Materia Medica, upon the authority of

Captain Lyon. Dr. Nachtigal has lately given an account of his sojourn among the Tibbus, living in the mountainous country of Tu (17° to 18° longitude east of Greenwich, 18° to 20° N. latitude), and described their mode of preparing colocynth seeds for food. They free the seeds from the bitter pulp by treading upon them inclosed in strong bags; the seeds are then rubbed upon a smooth surface of rock, together with the ashes of camel's dung, with a rounded stone, and the testa is then separated from the kernel by winnowing; the kernels are heated to boiling, then washed with cold water, dried and powdered, and eaten with dried dates. Prof. Flückiger, in examining the seeds, found in the testa mucilage and a bitter principle. The fixed oil obtained from the kernel (16.94 per cent. of the seed), is thick, does not congeal in winter, has a bland taste, and hardens slowly when exposed to the atmosphere in thin layers. From the kernels alone, Dr. Flückiger estimates the fixed oil to amount to about 48 per cent., and the soluble and insoluble albumen to about 18 per cent., so that their value as an article of food is readily explained. Arch. d. Pharm., 1872, Sept., p. 231.

MYROBALANACEÆ.

Termenila Chebula, Retz.—The unripe fruit is known in Turkestan as *Halilei Sie*, while the nearly ripe fruit is called *Halilei Sart.* It is used medicinally, in the form of powder, for impurities of the blood, hallucinations, &c. By the Russian Tartars it is used medicinally on account of its purgative properties. Prof. Dragendorff, in N. Rep. Ph., 1872, 527.

T. Bellisea, Roxb.—The unripe fruit, known in Turkestan as *Ballija*, is there used as an appetizer and against hallucinations. Ibid., 528.

MYRTACEÆ.

The Eucalypts of Australia.—From a paper by Mr. Christian Hoffmann upon the Eucalypts of Australia, read before the Montreal College of Pharmacy, the following is extracted:

The genus, comprising some one hundred and forty known

species, forms one of the most characteristic features of Australian vegetation, comprising a great number of forest trees, many of them of magnificent proportions. The most gigantic species of the genus are the—

E. amygdalina, one of the peppermint trees, *E. goniocalyx* and *E. Stuartiana*, two of the white gum trees, and *E. obliqua*, the stringy bark tree. Some of these trees attain a height of from 425 to 500 feet. The *Eucalyptus globulus*, Labill., which, having been introduced into Southern Europe, Algeria, &c., is the better known of the genus, has been made the subject of closer investigation than the other varieties. It is the blue gum tree of Victoria and Tasmania, attains a height of 300 feet in Victoria, and to 120 feet without lateral branches. It must not be confounded with the blue gum tree of Western Australia, which is the *E. megacarpa*, and while rivalling the *E. globulus* in size, is otherwise quite distinct. The *E. globulus* contains, besides the essence *Eucalyptol* (volatile oil), a solid, resinous, bitter principle from which the leaves seem to derive their febrifuge properties. From these leaves *volatile oil*, *powder*, *infusion*, *decoction*, *distilled water*, *aqueous* and *alcoholic extract*, *tincture* and *alcoholate*, a *liquor*, similar to the liquor of mastic, a *wine*, *cigars* and *cigarettes* are made, and employed medicinally.

The *timber* of the Eucalypts when green is generally soft, but when cut and exposed for a short time becomes very hard, and in consequence difficult to work. The *bark* of some of these trees is remarkable for its hardness, the *E. leucoxylon* being from this peculiarity called the iron bark tree. Many of the barks of this genus are remarkable for their astringent qualities, and are found to contain considerable quantities of tannin. Nearly all of the species contain a greater or less quantity of *gum resin*, hence the almost universal appellation of *gum trees* to them by the colonists. The most familiar gum resin to us is the *Botany Bay kino*, obtained from the *E. resinifera;* that which finds preferably therapeutic application is obtained from *E. rostrata*.

To Baron Von Mueller is due the credit of having been the

first to draw attention to the essential oils from the Eucalypts. At his suggestion, Messrs. Bossisto and Johnson prepared essential oils from a number of species of the genus (furnished to them for this purpose by Baron Von Mueller), in each case determining yield, &c. The similarity in the general properties of the *volatile oils of the Eucalypts* is so great as to warrant some general allusions to them. They are all soluble in all proportions in turpentine (oil of ?), both fat and drying oils, benzin, naphtha, ether, chloroform, and absolute alcohol. Spirit of wine dissolves them pretty freely; water by agitation takes up in most instances about 1 per cent. by weight. They are all more or less excellent solvents for a great variety of resinous substances; are valuable for illuminating purposes, burning in all cases with a flame equal, and in some instances superior to the American kerosene, while the odor produced by their combustion is more agreeable.

E. Amygdalina, Labillardière.—Peppermint tree, occurrence in Victoria, New South Wales, and Tasmania. Foliage yields a larger amount of volatile oil than any of its congeners; one hundred pounds of the fresh gathered leaves, including small branchlets to which they are attached, yielding 60.50 fluid ounces. The oil is thin, fluid, transparent, pale yellow, of pungent odor resembling oil of lemon, but coarser and stronger, has a cooling rather mild, bitterish, camphor-like taste, a specific gravity of 0.881, boils freely at 330°, but its temperature rises as evaporation proceeds rapidly to 370° Fahr., where it remains almost stationary. Cooled to 0° Fahr. it becomes turbid, and deposits a white flocculent substance which melts at + 27° Fahr. Exposed in shallow vessels it is oxidized, forming resinous matter. Its solubilities and solvent power agree with the general description above given. It is ignited with difficulty, but in a kerosene lamp burns with flame almost as luminous as kerosene.

E. Oleosa, Ferd. Mueller.—Mallee scrub. Occurrence northwest of Victoria. Requires to be ranked as a shrub, inasmuch as it rarely exceeds twelve feet in height. One hundred pounds of the green leaves and branchlets yielded twenty

fluid ounces of essential oil, which is thin, liquid, pale yellow; mild, camphoraceous taste, reminding of turpentine; odor mint-like, and not so agreeable as that from *E. amygdalina;* specific gravity 0.911, boils freely at 322°, rises and remains stationary at 350° Fahr. Good solvent for some resins.

E. Leucoxylon, Ferd. Mueller.—Iron-tree bark. Hab. South Australia, Victoria, and New South Wales. One hundred pounds of the leaves yielded but 16.88 fluid ounces of the essential oil, but this yield must be accepted with allowances as the leaves had undergone fermentation during transport. The oil is thin, limpid, very pale yellow; taste and odor very closely resembling that of *E. oleosa;* specific gravity 0.933, boils at 310°, and rises to 352°. Ignites with difficulty in open vessels, but burns well in a lamp. A good solvent for some resins.

E. Goniocalyx, Ferd. Mueller.—White gum tree, spotted gum tree. One hundred pounds of the fresh leaves yielded 16 fluid ounces of volatile oil of a very pale yellow color, pungent, penetrating, and somewhat disagreeable odor, strong and exceedingly unpleasant taste; specific gravity 0.918, boils at 306°, rising to 346° Fahr. An admirable illuminating oil. A good solvent for resins.

E. Globulus, Labillardière.—Blue gum tree. Hab. Victoria and Tasmania. One hundred pounds of the fresh leaves yielded 12.50 fluid ounces of essential oil, which is thin, limpid, pale yellow; odor not unlike cajeput (to which all the eucalyptine oils have more or less resemblance), camphoraceous smell predominating; taste not as disagreeable as that of *E. goniocalyx*, more cooling and mint-like; specific gravity 0.917, boils at 300°, rising to 350° Fahr., remains clear at 0° Fahr. Burns with difficulty in an open vessel, but is superior as an illuminating oil to kerosene when burned in a lamp.

E. Corymbosa, Smith.—Bloodwood tree. Hab. Victoria, New South Wales, and Queensland; a rather large tree. One hundred pounds of the green leaves (which had undergone fermentation during transport) yielded 12.50 fluid ounces of a

colorless, limpid oil, differing in odor from all other eucalyptus oils, taste slightly bitter, becoming irritating, and mint-like, specific gravity 0.881; in a lamp more luminous than kerosene; a good solvent for resins.

E. Obliqua, *L'Heritier*.—Stringy bark tree. Hab. Victoria, South Australia, New South Wales, and Tasmania. Three to four hundred feet high. One hundred pounds of fresh leaves yielded 8 fluid ounces of transparent, reddish-yellow oil; odor milder and less disagreeable than that of *E. goniocalyx* and *E. globulus;* taste rather more irritating but less disagreeable than the other eucalyptine oils; specific gravity 0.899, boils at 340°, rises to 382° Fahr., becomes turbid at 0° Fahr.; burns in the lamp with a fine white flame.

E. Fissilis, *Ferd. Mueller*.—Messmate tree. Hab. Same as *E. obliqua*. One hundred pounds of fresh leaves yielded 8 fluid ounces of volatile oil resembling the oil from *E. obliqua* very closely in its general character; specific gravity 0.903, boils at 350° Fahr., rising to 386° Fahr. Rather less luminous than kerosene.

E. Odorata, *Behr*.—Peppermint tree. Hab. South Australia. In two experiments 100 pounds fresh leaves yielded respectively 0.69 and 4.17 fluid ounces of essential oil, both samples being pale yellow, inclined to green, thin, limpid fluids, aromatic camphoraceous odor, and taste similar but milder than that of *E. obliqua*. Oil No. 1 had a specific gravity of 0.899, boiling-point 335°, rising to 390° Fahr. Oil No. 2, specific gravity 0.922, boiling-point 315°, rising to 356° Fahr. Both oils are superior illuminating oils.

E. Longifolia, *Link*.—Woollybutt. Hab. Victoria and New South Wales. One hundred pounds of the fresh leaves yielded 3.40 fluid ounces of oil of specific gravity 0.940, boiling at 380° Fahr., rising to 420° Fahr., of aromatic, cooling taste, with little pungency, fragrant camphoraceous odor, and oily consistence.

E. Rostrata, *Schlechtendal*.—Red gum tree (but not of West Australia). Hab. West Australia, Victoria, New South

Wales, North and Central Australia. One hundred pounds of fresh leaves yielded 1.56 fluid ounces of oil, of pale yellow color, with occasionally a reddish-amber tint; specific gravity 0.918, boils at 280° Fahr., rising to 358° Fahr., almost gelatinizing at 0° Fahr.

E. Viminalis, Labillardière.—Manna Eucalypt. Hab. South Australia, Victoria, New South Wales, and Tasmania. One hundred pounds of fresh leaves yielded 0.65 fluid ounce of volatile oil, of pale yellowish-green color, disagreeable, but not very strong or penetrating odor, and taste similar to that of *E. odorata;* specific gravity 0.921, boils at 318°, rising to 360° Fahr. When the leaves and slender twigs of the tree, which is middle-sized, are punctured or injured, a honey-like secretion exudes, which, when dried, constitutes the *Eucalyptus manna.* This, according to Johnston, contains *melitose.* Berthelot, who has since investigated it more fully, regards it as grape-sugar mixed with an isomere, *eucalyn.* A similar exudation is obtained from *E. dumosa.* Neither manna possesses any medicinal value. Proceedings Montreal College Pharmacy, Feb. 1873.

The above facts, as related by Mr. Christian Hoffmann, in a paper read before the Montreal College of Pharmacy, are substantially contained in an abstract from a memoir presented by M. Raveret-Wattel to the Société d'Acclimation, and published in Pharm. Journ. and Trans., July 13, 1873, fol. 22 to 24, and July 20, fol. 43 to 45.

Eucalyptus Globulus.—A very interesting account of the history, uses, propagation, medicinal and other properties of the fever tree, is given by Dr. Pedro L. N. Chernovis, of Bahia, in the Gazeta Medica de Bahia. The tree has been introduced into various provinces of Brazil, and is called fever tree, from its alleged marvellous results in the treatment of intermittent fevers. The tree is colossal, sometimes attaining a height of 300 feet and a diameter of 30 feet. All parts are aromatic, the small roots, flowers, and leaves being more so than other parts. An essential oil is produced from it which is used medicinally, as are also an infusion, decoction, an

aqueous and an alcoholic extract. Am. Journ. Pharm., 1872, p. 564.

Formulas for preparing a syrup, tincture, wine, and extract of Eucalyptus globulus are published in L'Union Pharmaceutique, Sept. 1872, and will be found under the respective titles in this report.

Volatile Oils from certain Species of Melaleuca.—At the suggestion of Baron Von Mueller, Messrs. J. Bossisto and W. Johnson have prepared essential oils from a number of species of *Melaleuca*, indigenous to Australia, the material being furnished them by Baron Von Mueller. These oils are more than probably very closely related in their medicinal properties to the oil obtained from the cajeput plant (Melaleuca leucodendron), with which the plants subjected to experiment are so closely allied botanically. The productiveness in oil of the various tea trees (commonly so-called), far exceeds that of the *M. leucodendron*, and would be yet more striking if the leaves had been operated upon alone. They are excellent for illuminating purposes, and in most cases excel in that respect the best American kerosene. They are generally also good solvents for resins.

Melaleuca Linarifolia, Smith.—Hab. East Gibbs Land, New South Wales, and Queensland. One hundred pounds of fresh leaves and branchlets yielded 28 fluid ounces of a mobile, light straw-colored volatile oil; odor resembling, but less aromatic and pungent than that of cajeput; taste singularly agreeable, suggestive of mace, and followed by a mint-like aftertaste; specific gravity 0.903, boils at 348°, and rises to 369° F.

M. Curvifolia.—Hab. Coast of Victoria. One hundred pounds of fresh leaves and branchlets yielded 5.90 fluid ounces of an amber-colored volatile oil, of oily consistence; taste resembling oil of cajeput; specific gravity 0.938, boiling-point 364°, rising to 408° F.

M. Ericifolia, Smith.—Hab. South Australia, Victoria, New South Wales, and Tasmania. One hundred pounds of fresh

leaves and branchlets yielded 5.00 fluid ounces of a thin oil, resembling oil of cajeput very closely, but somewhat less agreeable in odor; specific gravity 0.902, boils at 300°, and rises to 362° F.

M. Wilsonii.—Hab. Victoria. One hundred pounds yielded 4 fluid ounces of a pale yellow oil, possessing a very diffusible and pungent taste; specific gravity 0.925.

M. Uncinata.—Hab. Victoria to Western Australia. One hundred pounds of fresh leaves and branchlets yielded 1.75 fluid ounces of a green volatile oil, of a taste resembling more that of the eucalypts than of cajeput, odor similar to cajeput; specific gravity 0.920.

M. Genistifolia, Smith.—Hab. New South Wales, Queensland, and North Australia, rare in Victoria. One hundred pounds of fresh leaves and branches yielded 1.25 fluid ounces of a pale greenish-yellow oil, possessing a mild odor and taste, but characteristic of the tea-tree oils.

M. Squarrosa, Smith.—Hab. South Australia, Victoria, New South Wales, and Tasmania. One hundred pounds of the *dried* branchlets and leaves yielded 0.63 fluid ounce of a green volatile oil, resembling the oils of *M. uncinata* and *M. ericifolia*, but of disagreeable taste. Proceedings of Montreal Col. Pharm., Feb. 1873.

ROSACEÆ.

Attar of Roses.—The preparation of attar of roses, the invention of the old Hindoos, is still carried on to a small extent in India, the most important place of its production being "Ghazimpoor," on the Ganges, but none of the oil produced there seems to enter commerce. The product of the "Shirza Plain," in Persia, is also very insignificantly represented in European markets, and it has been noticed that attar of roses is not produced there at all, but is imported from India. The attar of roses consumed in Europe is essentially of Turkish origin, produced in some one hundred and fifty places on the southern slope of the Balkan Mountains,

where the *Rosa Damascena*, *R. sempervirens*, and *R. moschata* are chiefly cultivated, the most important districts being Tchirpan, Philipopolis, Carlova, Yeni-zaghra, and Kizanlick, the latter district alone producing, it is estimated, 500,000 metticals (1 mettical = 4.79 grammes). The roses, planted in rows like the vine, are gathered in May, and subjected to distillation, together with their green calyx leaves, in stills made of tinned copper, from which a pipe runs into a cooling-tub. The source of heat is an open fire; the charge consists of 50 okes (1 oke = 1200 grammes) of water, and 10 to 20 okes of roses; the mass is boiled for two hours, the first portion distilled being returned to the still, and the subsequent distillate is collected in bottles with broad bottoms and straight necks; water and oil distil over together, the latter being collected when the layer is of the thickness of a finger. Five thousand pounds of roses yield 1 pound of oil. The congealing-point of Kizanlick oil varies between 8° and 16° R. (=50° to 68° F.), the best oil being solid and stiff at these temperatures, while the oils coming from the warmer districts solidify at 12° to 16° R. (=59° to 68° F.), are marked strong oils, have a less delicate odor, and are prepared by ignorant traders. The oil is adulterated most extensively at its home, where the adulterant is also produced, an oil called, in India, *rosia oil*, in Egypt *idris oil*, and in England *ginger oil*, and which is distilled from a species of Anatherum (Cymbopogon) and Andropogon. This oil is sometimes called geranium oil, with which it is by no means identical. Am. Journ. Pharm., 1872, p. 513.

The elæopten of oil of roses may, according to R. Bauer, be readily converted into stearopten. After carefully separating the elæopten from the stearopten naturally existing in the oil, it is added drop by drop into a capsule containing a few granules of zinc, and sufficient alcohol acidified slightly with muriatic acid to dissolve the elæopten. Frothy stearopten forms upon the surface, and is removed from time to time to facilitate the reaction, which was in the experiments of the author completed in a few days. The stearopten was washed with 76 per cent. of alcohol, until the washing no

longer became turbid upon the addition of water, was carefully melted and dried over chloride of calcium, when it was found to be identical with the natural stearopten in its general appearance, solubilities, and in its melting and congealing points. Pharm. Centralhalle, 1872, No. 34.

Sweet Almonds.—The observation of Almén, that sweet almonds contain traces of amygdalin, has prompted Dr. Ludwig to publish the results of an analysis of sweet almonds, conducted in his laboratory by E. Schutz, in 1865. The author found them to contain besides fixed oil, albuminoids, emulsin, and cellulose: 1, iron greening tannic acid; 2, red coloring matter; 3, glucose; 4, a yellow coloring matter, changed to a cherry red by alkalies, and proven to be a glucoside; 5, traces of amygdalin. An ethereo-alcoholic solution of a portion of the constituents extracted by the author, having been evaporated, boiled with muriatic acid, and then treated with caustic soda, developed the odor of oil of bitter almonds. Arch. d. Pharm., 1872, No. 42.

Oil of Bitter Almonds.—According to Henninger and Bourgoin, an adulteration of oil of bitter almonds with nitrobenzole may be detected by the addition of solution of potassa. The liquid is green if nitro-benzole is present, and upon dilution three layers are formed, the lower yellow, the upper green. Over night the green color changes to red. Zeitschr. f. Anal. Chem., 1872, p. 316.

LEGUMINOSÆ.

Astragalus Verus.—According to J. M. Stöckel, Smyrna gum tragacanth is exported uniformly unadulterated. It is collected, partly naturally exuded and partly by incisions, in the interior of Asia Minor, mostly upon high mountains, and is most abundant in the neighborhoods of Caraissar, Yalovaschi, Burdur, Musul, and Karaman. By allowing the juice to harden for a long time, the gum becomes darker and knotty, instead of flaky, and consequently inferior. The collections in the neighborhoods of Yalovaschi and Burdur are characterized by their handsome white and flaky condition, while Caraissar,

Musul, and Karaman, furnish commoner varieties. The collection is ended in September, when the rainy season sets in, and when this occurs earlier than usual, it makes it necessary to house the yield as rapidly as possible, and then sometimes causes the crop to be more or less inferior to that of other years. N. Rep. Pharm., 1872, p. 558.

Mezquit Gum, which exudes from the stems and branches of a *Mimosa*, several species of which grow in Texas, New Mexico, and Arizona, is, according to Mr. F. Kalteyer, almost identical with gum arabic. In Bexar County, Texas, some 12,000 pounds have been collected during the past year. The species of Mimosa which is most common in Bexar County, grows from 20 to 40 feet high and 18 inches thick. Its wood is used for charcoal, for picket fences, and for making fine furniture. Amer. Drug. Circ., Feb. 1873, p. 51.

Extract of Licorice.—Mr. William N. Martindell has examined various brands of extract of licorice of commerce with the following results,—Corigliani: 500 grains = 280 soluble in water, 218 grains dry residue, 2 grains loss. Noel & Co.: 500 grains = 176 grains soluble in water, 253 grains residue, 71 grains loss. P. & S.: 500 grains = 225 grains soluble in water, 248 grains residue, 27 grains loss. Guzolini: 500 grains = 284 grains soluble in water, 175 grains residue, 41 grains loss. G. H.: 500 grains = 210 grains soluble in water, 233 grains residue, 57 grains loss. M. & R.: 500 grains = 317 grains soluble in water, 116 grains residue, 67 grains loss. The residue gave evidence of starch in all instances. The fracture, which is generally considered one of the best tests for licorice, was found brightest in the American article; the next was Corigliani, and then the other brands of Calabria licorice. The author is satisfied that the reputation of some of the brands is fictitious when compared with some less known, and that the domestic article should receive that sanction which is due to pure articles in pharmacy. Am. Journ. Pharm., April, 1873, p. 151.

(Has the author tested the domestic article for gum, &c.?—C. L. D.)

Balsam of Peru.—To detect adulteration it is recommended

to shake 2 to 3 c.c. with 6 to 8 c.c. of petroleum ether in a test-tube, when, if the balsam is pure, the mixture will separate into a thick black-brown mass, and a colorless or but faint yellow supernatant liquid, which may be poured off to the last drop without danger of pouring out any of the brown liquid. If it was adulterated, however, with any of the usual adulterants, the petroleum ether acquires more or less color —from yellow to brown—or becomes milky, while the brown liquid has a thinner consistence, and in pouring off the upper liquid, is apt to flow out with it. Apoth. Zeit., 1872, No. 49.

Trigonella Fœnum Græcum, L.—The seeds of a Trigonella, resembling very closely the seeds of T. fœnum græcum, but differing in being somewhat larger and of brighter color, are called in Turkestan *chilba dona*, and are there used principally externally in the form of poultices for heat in the head, swellings, &c. Prof. Dragendorff, N. Rep. Pharm., 1872, p. 534.

Vicia.—Piria found *asparagin* in vetches which had been grown exposed to bright light, as well as in those grown in the dark. Some years after Pasteur did not obtain a particle of asparagin from 200 litres of sap from vetches grown in the garden of the Strasburg Academy, whilst he found an abundance in vetches grown in the same soil in a cellar. A. Costa has lately experimented in the same direction, and obtained from a kilogramme of vetches grown in the month of July, and exposed to the light 16.25 grammes asparagin, while from an equal weight grown in a cellar he obtained but 13.56 grammes. Similar results were obtained in the months of August and September. Pharm. Journ. and Trans., July, 1872, p. 28, from Gaz. Chim. Italiana.

TEREBINTHACEÆ.

Xanthoxylum Piperitum, D.C.—Its fruit is used in Turkestan for unpleasant smelling sweating and breath. It is also used in China and Japan, and a variety of Xanthoxylum enjoyed a reputation among the ancient Arabs as a stimulant to the stomach and liver, while the juice was used to rinse the mouth to remove bad odor. Prof. Dragendorff, N. Rep. Pharm., 1872, p. 544.

Rhus Coriaria, L.—The fruit called *Tatum* in Turkestan, *Sumak* in Persia, is used in Turkestan, owing to its acid and astringent qualities, in the form of gargle for inflammation of the throat. In Southern Russia it is used to prepare a wash for sore gums. Prof. Dragendorff, in N. Rep. Pharm., 1872, p. 544.

Rhus Toxicodendron.—Dr. C. A. Canfield recommends the fresh bruised herb of *Grindelia hirsutula* or of *G. robusta* as an invariably reliable antidote to poisoning by the poison oak. It is used by rubbing over the parts affected, or by making a strong decoction in a close vessel, and using the decoction as a wash. It was originally used by the Indians. Amer. Drug. Circ., April, 1873, p. 75.

Rhus Succedaneum, Japanese Wax.—Dr. C. Roucher has determined the melting-point of Japanese wax by using very thin closed tubes, 15 millimetres wide, and plunging them into water at various temperatures. The temperature at which the melted wax is completely transparent was found to be 54° C. (= 129° F.), when the heat was increased slowly; but when rapidly heated to melting, then allowed to cool, and again plunged into water of 42° C. (= 107.6° F.) it again became transparent, thus proving it to have two melting-points. This anomaly is not peculiar to the Japanese wax, natural stearin, monomargarin, and palmitin, showing similar anomaly. The author also proved by experiment that Japanese wax is homogeneous in constitution and not composed of two or more bodies. Experiments were also made to ascertain the relative points of fusion of cerates made with this wax and with beeswax; a mixture of 10 parts of wax and 35 parts of olive oil being used for this purpose. Such a mixture made with Japanese wax melted at 46° C. (= 114.8° F.), and if it was then heated to 50° C. (= 122° F.), allowed to cool, and plunged into water at 32° C. (= 81.6° F.), it again became liquid and transparent. A mixture made with white beeswax in the same proportion was found to melt at 57° C. (= 134.6° F.). Pharm. Journ. and Trans., Aug. 1872; Am. Journ. Pharm., 1872, p. 543.

Semecarpus Anacardium, L.—The fruit is used in Turkestan as a diuretic, and is there called *Baladur*. It was known and used by the Arabian physicians Avicenna, Ebu Baithar, Rhazes, and others, who used it internally for a similar purpose, and externally as an epispastic. According to Lehman it is still used in Southeastern Russia and in Persia as an ingredient in a blistering cerate, and as a remedy for gout. Prof. Dragendorff, in N. Rep. f. Pharm., 1872, p. 515.

Pistacea Vera.—The gallnut derived from this plant is known in Turkestan as *Busch quasch*, and used for its tannin, of which, according to Palen, it contains 43 per cent. Ibid., p. 530.

Coriaria Thymifolia.—According to Rev. F. Moigno, efforts are made to acclimatize this plant, *the ink plant of New Granada*, in Europe. The juice of this plant, locally termed *Canchi*, is at first of a somewhat reddish color, but becomes intensely black in a few hours. The juice may be used without preparation; corrodes less, and resists the action of chemical reagents better than ordinary ink. Amer. Journ. Pharm., 1872, p. 418; from Chem. Trans., 1872.

RHAMNACEÆ.

Rhamnus Catharticus.—The culture of the buckthorn berries, which yield the supplies to the Smyrna markets, is satisfactory only to a certain degree, according to Stöckel. Prime berries should be large, green, and fresh; but very often the berries are allowed to remain longer upon the plant than is necessary to their ripening, and then become black. The second quality, which should consist of the green, but small berries, often contain the black berries admixed, and as an adulterant also green Morea berries, which look sufficiently like the buckthorn berries, but, while possessing also a yellow coloring matter, injure that of the buckthorn berries. Arch. d. Ph., 1872, July.

AQUIFOLIACEÆ.

Ilex Cassine, L.—The leaves contain, according to Henry

M. Smith, 0.122 per cent. caffeina, 0.011 per cent. volatile oil of pleasant odor, reminding of tobacco (?), and tea, tannin, resin, wax, pectin, gum, chlorophyll, coloring matter, and nitrogenous substance. Am. Jour. Ph., Arch. d. Ph., 1872, July.

Prinos Verticillata.—Prof. J. M. Maisch having suggested the probability that the yellow color of the bark of Prinos verticillata is due to berberina, Mr. W. J. Lerch endeavored to obtain it from that source, but failed entirely to obtain it. It does not appear that the author has ascertained to what principle the yellow color is due. Am. Journ. Pharm., June, 1873, p. 251.

EUPHORBIACEÆ.

Euphorbia Ipecacuanha.—The experiments of Mr. Christopher Petzelt indicate that the activity of the root of Euphorbia ipecacuanha is solely due to its resin. This is readily obtained by precipitating a concentrated alcoholic tincture by pouring in water, washing and drying the precipitate. It is soft, yellowish, and consists of two resins, one soluble in ether and alcohol, the other in alcohol only. The latter, when dissolved in solution of potassa, is, like the resin of jalap, not precipitated by muriatic acid in excess. Besides the resin the author found fixed oil, wax, starch, glucose, and inorganic salts. Am. Journ. Pharm., June, 1873, p. 255.

Stillingia Sebifera, the tallow tree, is to the inhabitants of Kiang-se, Kiang-naw, and Chih-kiang, a very important source of revenue, and is cultivated to a considerable extent. The nuts yield a vegetable tallow and an oil, the former amounting to about 8 per cent. of the kernels; the latter to 30 per cent. The tallow is hard, brittle, white, opaque, tasteless, and odorless; melts at 104° F., and may be regarded nearly pure stearin (?). The manner of obtaining the tallow and oil is given in Am. Drug. Circ., Jan. 1873, p. 35, from Brit. Med. Journ.

Rottlera Tinctoria, Roxb.—Mr. T. B. Groves's experiments with kamala, furnished by Mr. D. Hanbury, satisfactorily

prove the presence of the crystallizable substance, *rottlerin*, discovered by Anderson, the existence of which has been doubted by Leube and others. The cause of failure to obtain this principle by Leube and other experimenters is probably owing to the fact, discovered by the author, that when rottlerin is exposed to the air for a few days, its solubility is diminished and its crystallizability entirely lost. Pharm. Chem. Rec., Nov. 1872, p. 256.

Dr. R. Kemper has lately met with kamala in German and English commerce, yielding 20.7, 26.5, 50, and 54.4 per cent. ashes, and was unable to obtain a better article. In 1868, when adulterated kamala was also in the market, an article yielding not over 8.7 per cent. ashes could be readily obtained. Anderson states the yield of ashes of pure kamala to be 3.84 per cent. Am. Journ. Pharm., 1872, p. 488; Arch. d. Pharm., 1872.

Aleutris Triloba, Forst.—Nallino found candlenuts to contain 62.97 per cent. of oil (extracted by bisulphide of carbon), 28.99 per cent. other organic substances, 5.25 per cent. water; yielded 2.79 per cent. ashes. Apoth. Zeit., 1872, No. 38.

Emblica Officinarum, Gærtn.—The fruit is known in Turkestan as *omilja*, by the Tartars as *amala*, and by the Persians as *boran*. The plant is indigenous in Hindostan, and is used in Turkestan for inflammation of the eyes and lungs, and in Persia as a vermifuge. Prof. Dragendorff, in N. Rep. f. Pharm., 1872, p. 528.

Caoutchouc.—In Nicaragua, the gatherer makes zigzag incisions upon the principal branches over the trunk of the tree, by which a kind of gutter is formed, down which the juice flows, and is collected in calabashes. In these it coagulates by simple agitation, or by the aid of the stalks of certain branchy plants, which allow their sap to flow down and act as a coagulating agent. Some trees give twenty pounds of caoutchouc, but it cannot be obtained from trees under fourteen years old. Unfortunately the harvesting is done with very little care, the gashes almost always penetrating beneath the bark. Am. Drug. Circ., Jan. 1873, p. 33.

URTICACEÆ.

Cannabis Sativa.—Mr. John R. Jackson gives some additional information in regard to certain products of the hemp plant in India. There are three well-known products in use in India, the first being the dried flower branches pressed together while in a fresh state, and used for smoking like tobacco; this is known as *gunja.* The second is known as *bhang*, and consists of the leaves and capsules, from which an infusion or intoxicating drink is made. The third, the one to which the author particularly refers, is called *churrus*, and is obtained in the form of an earthy resin. Churrus varies, however, in quality, three or more kinds being known; the first or highest quality occurring in large irregular lumps, the second in smaller lumps, and the third in finely broken pieces, with a large proportion of dust. Specimens preserved at the Kew Museum, which consist of compact pieces, evidently so moulded, possess the odor of musk; but whether this odor has been imparted to them during the process of preparation or by contact the author is unable to state. Churrus is, according to the author's information, seldom or never the pure resin as it exudes from the plant, so that it is not improbable that musk may sometimes be mixed up with it. Among other substances used to adulterate it, a meal prepared from the wild fruit of the Trebizonde date (Elæagnus hortensis) is exclusively used for this purpose. Pharm. Journ. and Trans., 1873, p. 764.

Maclura Aurantiaca, Nuttall.—On page 82 of the Am. Journ. Pharm. for 1872, Mr. J. M. Merrick notices a new dyestuff met in commerce by the name of *aurantin.* A correspondent from Bonham, Texas, suggests that the article in question is probably an extract of the wood of Maclura aurantiaca, commonly called osage orange and Bois d'Arc; a decoction of the chips being used as a yellow dye. It also yields a large percentage of tannin, and favorable experiments have been made with it in tanning leather. The seeds of the fruit yield an abundance of a bland and limpid oil, resembling in its taste olive oil,

maintaining its fluidity at a low temperature, and burning with a clear flame. Am. Journ. Pharm., 1872, p. 299.

MONIMINACEÆ.

Atherosperma Moschata, *Labillardière*.—The native sassafras tree. Hab. Tasmania, Victoria, and New South Wales, in Australia. From the bark Messrs. Bossisto and Johnson obtained a volatile oil, 100 pounds yielding 18.75 fluid ounces. It was of a thin, unctuous consistence, pale yellow color, deepening by age, and an oppressive and disagreeable smell, similar to oil of sassafras and caraway mixed; taste aromatic and rather agreeably bitter; specific gravity 1.040, boils at 446°, rising to 473° Fahr. The leaves also contain a volatile oil, which has not been isolated. The bark possesses valuable therapeutic properties, a decoction being employed as a diuretic and diaphoretic. M. N. J. Zeyer found it to contain an alkaloid, *atherospermia*. C. Hoffmann, in Proc. Montreal Coll. Pharm., Feb. 1873.

CONIFERÆ.

Thuja.—The leaves of *T. orientalis* and *occidentalis* (arbor vitæ) are employed in Belgium against small-pox. A tincture is prepared by macerating, for ten days, one part of the fresh leaves with ten parts of 90 per cent. alcohol; it is given in water in doses of ten drops. Am. Journ. Pharm., 1872, p. 355; Journ. de Pharm. et de Chim., 1872.

ARACEÆ.

Arum Venenatum, *W. Maschi*.—Mr. W. F. Appun contributes the following in regard to this terrible, but little known poison of the Serekongs (native of British Guiana). It is prepared from the tubers of Arum venenatum, by drying them in the sun, powdering, and pressing into quills. The tuber is so terribly poisonous, that by merely touching it a violent burning sensation and severe cutaneous eruption results. According to the dose given the person may live for months, or he may die in the course of a few hours, suffering terribly. Zeitschr. de Œst. Apoth. Ver., 1872, No. 25.

Calamus.—The rhizoma of a variety of calamus, differing from the ordinary calamus only in possessing a richer aroma and a dark reddish color, is known in Turkestan as *Igir*, and is used there against pain in the side, and as a diuretic. Prof. Dragendorff, in N. Rep. Pharm., 1872, p. 535.

UNCLASSIFIED VEGETABLE SUBSTANCES.

Corynocarpus Lævigata.—The nut of the Karaka tree, which in its raw state is terribly poisonous, producing violent spasms and contortions of the whole body, and unless rapidly attended to, speedy death, is used by the natives of New Zealand as food, after being subjected to certain treatment, and is highly valued as such, some tribes being in a great measure dependent upon it for sustenance. To deprive it of its poisonous qualities, it is subjected to a peculiar treatment of baking and washing, the details of which are given by Mr. William Skey, in Chem. News, 1872, p. 190. The author finding by experiment that the peculiar bitterness of the raw nuts was lost, both by roasting and by washing, attempted to isolate the bitter principle, and his labor was attended with perfect success. This principle, which seems to be a crystallizable glucoside, the author proposes to name *karakin*, and he has obtained it as follows: The kernels are triturated with successive quantities of cold water, till their bitter taste is gone, the solution is rendered distinctly acid with acetic acid, by which casein and albumen are precipitated, and it is then filtered and agitated with animal charcoal, by which the bitter substance is removed. The animal charcoal yields to boiling alcohol the bitter principle, which crystallizes out when the solution is allowed to stand two or three days at common temperatures. *Karakin* is intensely bitter, white, crystalline, of pearly lustre, melts at 212° F., soluble in hot water, feebly soluble in cold water, soluble in alcohol, and in acetic and hydrochloric acid. It is also soluble in ammonia and potash, but insoluble in ether and chloroform. An insufficient quantity has been obtained by the author to positively ascertain its action upon the animal economy, but it seems doubtless to be the poisonous principle of the karaka

nut. The nuts were found to contain besides the bitter principle, vegetable albumen (emulsin), casein (legumin), grape-sugar, gum, and a tasteless essential oil. Chem. News, 1873, p. 190.

Persian Saffron.—Referring to Professor Maisch's observations upon "African Saffron," Dr. Hager describes a so-called "Persian Saffron" obtained from a Berlin firm. It occurs in the form of compact lumps possessing a fatty odor, contains but few stigmas, and is composed mainly of floral petals, saturated with a thick fixed oil, which is readily removed by ether, and is regarded by the author to be olive oil colored with curcuma. As it yields its coloring matter to benzin, this prepared saffron is readily distinguished from the genuine, which does not yield its coloring matter to the petroleum ether. Pharm. Centralhalle, 1872, No. 40.

Koegoed, a new drug growing wild in great abundance in Bushmanland, South Africa, was exhibited at the meeting of the British Pharmaceutic Conference, by Mr. G. A Keyworth. The plant exists as a creeping root on the surface of the soil, there impregnated and whitened with nitrate of soda. Neither leaf nor flower are observed. It is chewed by the natives as an alterative, but is chiefly used as a condiment with the food of cattle. Its general properties are purgative, sedative, and stimulant-stomachic. Pharm. and Chem. Rec., Nov. 1872, p. 257.

Coorongit.—For some time a substance called Coorongit has reached European commerce from Australia, which possesses all the properties of common caoutchouc. It is called after the location where it is found, Coorung, where it forms moderately thick layers upon the sand, on the edge of a considerable land depression. According to the analyses of Bernays, it seems to be composed of hydrocarbons. Chem. Centralblatt, 1873; Pharm. Centralhalle, 1873, No. 2.

ANIMAL SUBSTANCES.

PORIFERA.

Sponges.—From an abstract of a report by Mr. Green, Vice-Consul at Tunis, for Great Britain, the following interesting items regarding the collection of sponges on the coast of Tunis are gleaned: Sponges are found on the whole length of the Tunisian coast, but apparently in profitable quantities only in the shallows of Karkenah, Jerbar, Zarsis, and Biban. They grow upon rocky, sandy, or muddy bottoms, and the greater the depth the better the quality of texture and shape. As collected by the natives, they enter the Tunisian markets in the unwashed state, in which condition they present a black appearance, and require to be washed before entering general commerce. The washing is exceedingly simple, the sponges being tied to poles, driven in the sea near the beach, in strings of a dozen each. In two or three days the wash of the sea cleans them of the black coating (produced by slime), and they are then hung up to dry and bleach in the sun. The preferred sponge-gatherers are, however, Greeks and Sicilians, the Greeks being the most expert divers. The sponges gathered by them are always washed before delivery to the merchants. The sponges are either collected by spearing with a trident, by diving, with or without the assistance of apparatus, or by dredging with a machine similar to an oyster dredge. The Arabs fish in a depth of the sea of fifteen to thirty-five feet, while the Greeks reach sponges at a depth of sixty feet. Tunisian sponges are of the quality generally known as "horse (carriage) sponges," similar to those from the Bahamas and other West Indian Islands, but stronger, more elastic, and absorb a greater amount of water; hence are of greater market value than the American sponges. Pharm. Journ. and Trans., July, 1872, p. 24.

Sponges that have been used, are best cleansed, according to Bouchardat, by immersion into a 4 per cent. solution of permanganate of potassium, subsequent immersion in solu-

tion of 1 part of sulphurous acid (?), in 3 parts of water, and final washing in pure water; so treated they reassume their natural color and softness. Pharm. Zeit., 1872, No. 74.

Leriche pursues a method identical with the above. The sponges acquire their original condition, even their marine odor, although they may have been soaked in pus and infectious matter. Am. Journ. Pharm., 1872, p. 355, from Rép. de Pharm., 1872.

ANNULOSA.

Leeches.—Dr. L. Enders finds that leeches keep perfectly well in water containing water plants, the latter serving the purpose of purifying the water, by absorbing ammonia produced from the mucus of the leeches. It is necessary to change the water once in fourteen days ordinarily, in winter but once in three weeks.

Dr. H. Ludwig suggests that when so kept it is necessary to keep them exposed to diffused daylight, and not in the dark as is usual. Arch. d. Pharm., July, 1872.

INSECTA.

Cantharides.—Rennard's experiments prove, in contradiction to those of Radecki, in 1866, that cantharidin is contained in an aqueous distillate of cantharides, and that it is consequently both volatile and soluble in water. He ascribes the failure of Radecki, to find cantharidin in the distillate, to the use of insufficient quantities of cantharides, and to that they were too old. The percentage of cantharidin obtained by Rennard is also higher than that obtained by Bluhm, which is evidently owing to a fresher quality of the cantharides used; but possibly also to a modification of the process of Bluhm-Dragendorff; the modification consisting in saturating the mass of cantharides and magnesia with chloroform before adding the sulphuric acid, thereby preventing the crystallization of the cantharidin liberated from its combination with magnesia, and permitting its extraction with smaller quantities of ether. Rennard obtained the following percentages:

1. Cantharides from Kursk: brownish-green; badly preserved; date of collection not known, 0.38 per cent.

2. Cantharides from Tula: blue-green; in better condition than No. 1, 0.431 per cent.

3. Cantharides from the neighborhood of Heidelberg: blue-green, of tolerably strong odor; one year old, 0.439 per cent.

4. Cantharides from Romni (Pultawa): 7 to 8 months old; of powerful odor; the individual flies larger than any of the above mentioned; not less than 0.57 per cent.

Pharm. Centralhalle, 1872, No. 36.

Apis Mellifica.—Beeswax. E. Donath determines the purity of beeswax as follows: A piece of the size of a walnut is boiled for five minutes with a concentrated solution of carbonate of sodium. If the wax floats upon the surface of the liquid, upon cooling, unchanged, all adulterants, except paraffin, are excluded. Should the sp. gr. be lighter than 0.960, paraffin is present, if it has stood the test of boiling. Should an emulsion be formed by boiling, and remain upon cooling, the wax is adulterated with turpentine, tallow, stearic acid, or Japanese wax, for the individual detection of which the author gives a systematic course, too voluminous to find room in this report. Apoth. Zeit., 1873, No. 1.

PISCES.

Cod-liver Oil is flavored by Duquesnel with 1 per cent. of oil of eucalyptus, which covers the odor and taste so completely that only that of the latter is perceived, and even the unpleasant eructations are entirely modified. Amer. Journ. Pharm., 1872, p. 302; from Journ. de Ph. et de Ch.

Godin recommends, in place of the ordinary solutions of metallic salts, their solution in cod-liver oil by means of benzoic acid. Cod-liver oil can thus be made to take up benzoate of iron and benzoate of mercury. Benzoate of iron—a beautiful orange-colored salt of stable character—increases the therapeutic activity of the oil, conceals its unpleasant taste, and renders it more digestible. Pharm. Journ. and Trans., Dec. 1872, p. 488.

Isinglass.—Mr. C. Carroll Meyer finds the following to be the solubility of various kinds of isinglass in water: 100 grains of each being first softened in 8 fluid ounces of water, then boiled with the addition of 8 fluid ounces more of water; American strip, 70 per cent.; American sheet, 82 per cent; Russian, 88 per cent; Prussian, 80 per cent. By adding 1 part of glycerin to 15 parts of aqueous solution of isinglass, the solutions kept quite well, while those to which no glycerin had been added soon decomposed and became offensive. Amer. Journ. Pharm., June, 1873, p. 258.

MAMMALIA.

Musk.—Rump, in a paper upon the properties and recognition of genuine Tonquin musk, remarks that the fresh musk-bags afford the best opportunity for its adulteration, they being provided with a small opening, and the membrane possessing a certain expansibility, which is no longer the case when the bags have become thoroughly dried. The adulterations are therefore practiced at the place of export, although, from the fact that the empty musk-bags are in great demand and bring a good price in London, the author inclines to the opinion that it is there adulterated to some extent. The fresh bags are rendered inferior, 1st, by the removal of a part of their contents; 2d, by the subsequent introduction of heterogeneous substances, such as pieces of skin, lead, horn, &c.; 3d, by emptying them entirely of their original contents, and substituting a more or less adulterated mass.

Tonquin Musk, when taken from fresh bags, is in form of an unctuous mass, and when dry forms grains, varying in size from a pin's head to a pea, of a dark, nearly black-brown color, soft to the touch, striated throughout with delicate membrane, which remains undissolved in water, in which the grains are for the greater part soluble. It is always ammoniacal, and is sparingly soluble in alcohol. The membrane residue serves as the best means of recognizing this variety of musk.

Assam Musk, which comes in flat bags, and has a very

heavy membrane, is preferred by perfumers, although containing less musk.

Cabardine Musk is inferior to the other varieties, has a resinous odor, and is employed, doubtless, for adulterating the Tonquin variety, there being no demand for it.

The odorous principle of musk, and its permanence, are owing to a peculiar neutral volatile oil, free carbonate of ammonia, and traces of butyric or other similar acid. Apoth. Zeit., 1872, No. 38.

From the records of Messrs. Cramer and Small, the following has been furnished to the Philadelphia College of Pharmacy, to show the yield of musk:

	Weight of Bags.			Weight of Musk.		
No. of Bags.	Troy oz.	Drachms.	Grains.	Troy oz.	Drachms.	Grains.
2	1	3			5	
3	2	3	15	1	2	
6	4	3	10	2	2	10
4	4	1		1	1	30
12	10			3	2	40
1		5	40		3	
1		6	23		3	28
—	—	—	—	—	—	—
29	23	6	28	9	3	48
Average for 1 bag,	394 grains.			156⅞ grains.		

Am. Journ. Pharm., 1872, p. 565.

Milk.—A. Hirschberg has observed that when 1 drachm of boracic acid is dissolved in 2 pounds of recently drawn milk, it will show a faint acid reaction after standing 96 hours (at a temperature of 10° R. = 55° F.), but even after 120 hours merely a thin film of cream had separated. Am. Journ. Pharm., 1872, p. 353, from Arch. d. Ph., 1872.

III. INORGANIC CHEMISTRY.

OXYGEN.

Oxygen.—Hyposulphite of sodium is recommended for the quantitative determination of atmospheric oxygen dissolved in water, and by this method the quantity of air dissolved

may be ascertained. A solution is prepared, 10 c.c. of which contain the quantity of hyposulphite of sodium that 1 c.c. of oxygen is capable of converting into sulphite. The water to be examined is blued with a little anilin blue, and covered with oil to exclude air. If the solution of hyposulphite is now allowed to flow in, the blue color will immediately disappear if no free oxygen is present; but if oxygen is present, the blue color remains until all has been absorbed in the formation of sulphite. The amount of hyposulphite required to decolorize the quantity of anilin blue used, may be ascertained in a preliminary experiment, and this will serve once for all, by using the same quantity of anilin blue thereafter. Owing to the rapid change of the test solution of the hyposulphite, however, it would be worthless if there was not a method of control available. Schutzenberger and De Lalande have observed that hyposulphite of sodium decolorizes an ammoniacal solution of sulphate of copper, while sulphite or bisulphite have no effect as long as free ammonia is present. An ammoniacal solution of sulphate of copper therefore serves as the controlling agent; the quantity of solution of hyposulphite of sodium, required to decolorize such a solution, of definite strength, being ascertained, immediately before using the test-liquid for oxygen. The data so furnished will, by simple calculation, enable the operator to determine the amount of hyposulphite used, and thus the amount of oxygen in the water. Zeitschr. d. Œst. Apoth. Ver., 1873, No. 6.

J. F. Martenson gives his experience in the preparation of oxygen for medicinal use, in Pharm. Zeitschrift f. Russ., 1873, No. 1. The author generates it from chlorate of potassium in coarse powder from which woody particles have been carefully removed. He mixes it with half its weight of peroxide of manganese, which has previously been heated to redness. If this is not done, often a peculiar and unpleasant odor is communicated to the gas which cannot readily be removed by washing. The author found that coarsely powdered *red iron ore* will answer perfectly as a substitute for the peroxide of manganese, while coarsely powdered bricks would afford a

very even current of oxygen. The author's method of washing and collecting the gas does not differ notably from that usually recommended. The paper is illustrated with the apparatus recommended.

Ozone.—A. Houzeau has constructed an ozonizer by which he is enabled to charge oxygen readily with 60 to 120 milligrammes of ozone to the litre of gas. The arrangement consists of a straight delivery-tube, such as is commonly used when generating the gas, fitting into the interior of this tube a copper, lead, or better, a platinum wire of 0.4 to 0.6 m. in length, one end of which is brought outside the upper part of the tube by a lateral opening, which is afterwards closed by wax or by the blowpipe flame. On the exterior of the tube a wire of the same metal is wound, so as to extend nearly as far down the outside as the length of the inner wire. The two wires being put in communication with the two poles of an induction coil, giving sparks 2 to 3 centimetres in length, immediately cause strong ozonization of oxygen, or of the air which is caused to pass through the tube. This ozonizing tube may be applied to any apparatus for making oxygen.

The ozone produced is fifteen to twenty times stronger than any hitherto obtained, and the author was thus enabled to review many of its properties.

Silver foil is readily oxidized; the oxide is alkaline, and blues reddened litmus.

Iodide of potassium is decomposed; iodine is liberated, and free potassa is formed.

Hydrochloric acid acquires the power of dissolving finely divided gold leaf, chlorine being liberated at the same time.

Ammonia is decomposed, with formation of nitric acid (nitrate of ammonia).

Sulphhydric acid is decomposed; sulphur precipitated.

Phosphuretted hydrogen (PH_3 of Thenard) burns with vivid flame in contact with ozone, which it will not do in contact with oxygen alone.

Organic matter is rapidly decomposed; caoutchouc being

corroded; solutions of anilin and weak solution of indigo are bleached. Am. Journ. Pharm., 1872, p. 407.

When peroxide of barium is decomposed with sulphuric acid, the liberated oxygen, according to Houzeau, possesses the property of liberating iodine from iodide of potassium. Mr. C. T. Kingzett has since determined that oxygen obtained from other sources, such as heating red oxide of mercury, decomposing bichromate of potassium with sulphuric acid, heating peroxide of manganese, &c., is capable of producing a like reaction. Of special interest is the fact that the oxygen obtained from binoxide of manganese at a red heat still retains the above-mentioned analogy to ozone, while ozone, as is well known, loses its property to decompose iodide of potassium at a temperature of 300° C. (= 572° Fahr.). Ber. d. d. Ch. Ges., 1872, No. 10; Apoth. Zeit., 1872, No. 27.

An apparatus for the preparation of ozone has been patented in France, which is based upon the fact, that cold air passed into a flame, yields ozone. The apparatus is composed of a series of Bunsen burners, and a like number of horizontal tubes, which, at a certain height, blow the air into the flames; opposite these tubes funnels are attached, by means of which the ozone, containing some acetylene and nitrous oxide, is collected. Apoth. Zeit., 1872, No. 35.

L. Carius prepared ozone according to Soret's method by electrolysis of cold dilute sulphuric acid, using wires of platinum and iridium as electrodes. The absorbing water was kept at a temperature between 0.5° and 3° C., the current was continued for two hours, and the unabsorbed gas carefully removed. The water, thus ozonized, possessed the property of liberating iodine from solution of iodide of potassium, the iodine being, upon further addition of ozone water, converted into iodic acid. Protoxide of thallium is converted into peroxide; indigo and litmus solutions are energetically decolorized, and tincture of iodine is colored blue by it. The absence of nitrous acid and peroxide of hydrogen in ozone water which had been exposed, was proven. The degree of solubility of ozone in water cannot be established, because it is always

mixed with a variable and large proportion of oxygen. Am. Journ. Pharm., 1872, p. 396, from Ber. d. d. Ch. Ges.

HYDROGEN.

Hydrogen.—Charbrier has demonstrated the existence of an active modification of hydrogen, bearing the same relation to hydrogen in the ordinary state, that ozone does to oxygen. He found that "electrolized" hydrogen would combine directly with nitrogen, and decompose oxide of silver at ordinary temperatures. Pharm. and Chem. Record, Jan. 1873, p. 24.

Snow.—A. Vogel suggests that the great difference observed in the amount of ammonia contained in snow-water, may be due to the temperature and to the manner of collecting the snow. In fresh snow fallen at from —15° to —19° C. (= + 5° to + 2.2° F.), he could not discover even traces of ammonia, while snow fallen at 0° C. (=32° F.), contained a little more NH_3 than snow fallen at —3° C. (= + 26.6° F.). If the snow has remained on the ground or upon the roof of a house for some time, the amount of NH_3 was increased, but varied for the different localities. Snow free from NH_3, slowly fusing in an open dish, contains after twenty-four hours appreciable quantities of ammonia. Am. Journ. Pharm., 1872, p. 453, from N. Rep. f. Pharm., 1872.

Peroxide of Hydrogen.—According to R. Böttger, peroxide of hydrogen prepared by his method, and perfectly free from acid, will keep for weeks in vials stopped with ordinary corks, and that it may even be exposed to a boiling temperature without decomposition. The author reminds of the importance of this preparation for medicinal purposes, its supposed instability having heretofore been a great drawback to its medicinal applications. N. Rep. Pharm., 1872, p. 239; Chem. Cent. Bl., 1872, No. 32.

NITROGEN.

Nitrous Oxide.—At a meeting of the Chemical Society, Mr. T. Wills described the process and apparatus necessary to the

preparation of *solid* nitrous oxide, by evaporation of liquid nitrous oxide. The solidification of nitrous oxide is facilitated by passing a current of air rapidly through the liquid. Unlike carbonic acid, the liquefied nitrous oxide may be preserved for some time in an open vessel, provided it be kept still. Chem. News, Feb. 1873, p. 103.

Atmospheric Air.—The detection of organic substances in atmospheric air is accomplished by A. H. Smee as follows: A glass funnel, the neck of which is closed and drawn to a fine point, is filled with ice, and placed upon a filter stand. The moisture of the atmosphere, condensing upon the surface of the funnel, contains the organic substances impregnating the atmosphere, and is collected in a vessel, placed beneath the point of the funnel. By this method the author has separated the odor of flowers, placing them for this purpose, along with the funnel arranged as above, under a bell jar. Pharm. Centralhalle, 1873, No. 9, p. 72.

SULPHUR.

Sulphuretted Hydrogen.—Mr. William Skey suggests the following as a ready method of obtaining sulphuretted hydrogen for the laboratory. Fragments of galena and granulated zinc, in proportions of about 1 to 1, are well mixed, and put into a small apparatus of the kind generally in use for the preparation of this gas, and hydrochloric acid diluted with water (1 to 20 or so), poured upon them. HS is instantly given off, and its evolution is found to proceed energetically, regularly, and continuously for a great length of time. A little hydrogen accompanies the gas named, and traces of hydrochloric acid. The latter is readily removed by washing, and the hydrogen does not interfere. The method is based upon the reaction of metallic sulphides with zinc in acidified water, as described in the Transactions of the New Zealand Institute, vol. iii, p. 222. By this reaction, sulphuretted hydrogen is thrown from the sulphide used, while the zinc is *oxidized*, and the sulphur of the sulphide *hydrized*, a true

voltaic pair forming, as further demonstrated in a subsequent paper. Chem. News, 1873, p. 161.

CHLORINE.

Chlorine for Chlorinated Lime.—A patent has been obtained in Great Britain, for the following process: Muriatic acid gas mixed with air, is passed over tiles and blocks, containing much oxide of iron and little clay, at a temperature of 200° C. (=392° F.). The process may be modified by passing a current of hydrochloric acid gas over the tiles, until they become charged with it, and then passing heated air over them, which reoxidizes the iron and liberates the chlorine. The chlorine so obtained is brought in contact with fine lime-dust in rotary cylinders, for the production of chlorinated lime. Apothek. Zeit., 1872, No. 32.

Chlorinated Lime.—An improved chlorometric process is proposed by G. Davis, in which a volumetric solution of arsenious acid is prepared, by dissolving 13.95 grammes in a solution of soda, diluting with a large quantity of water, adding an excess of hydrochloric acid, and then bringing it accurately to the measure of 1 litre; or the arsenious acid may be dissolved in 40 c.c. of glycerin by the aid of heat, and diluted to the measure of a litre with water. As an indicator, the author uses a concentrated solution of indigo. The solution of chlorinated lime to be tested, is prepared by triturating 5 grammes with sufficient water to produce a smooth magma, diluting this with water, allowing it to settle, decanting the nearly clear liquid into a flask marked to contain 250 c.c., repeating this until the chlorinated lime is in a dissolved or finely divided condition, and bringing the measure to 250 c.c. Having so prepared the test solution and the solution to be tested, 10 c.c. of the volumetric solution of arsenious acid is introduced into a flask, a few drops of indigo solution is added, and the well-mixed chlorinated lime solution is allowed to flow into the flask, until the blue color is changed to a brownish-yellow. The number of c.c. of solution so required is divided into 500, and the quotient indicates the percentage

of available chlorine in the sample examined. The chlorinated lime solution is not filtered or allowed to settle, but must be kept well mixed, because the undissolved portion always contains available chlorine. Pharm. Cent. Halle, 1872, No. 48, p. 434.

Chlorinated Lime is recommended by Albert Eckstein as the best disinfectant for privies, sinks, &c., and he has proven by experiment its superiority over sulphate of iron, sulphate of copper, sulphurous acid, crude permanganate of sodium, carbolated lime, and crude carbolic acid. To obviate the rapid elimination of chlorine, the chlorinated lime is wrapped in parchment-paper, and thrown into the privy vault. Two pounds so prepared remained active during nine days, while the other substance compared with it remained active only one to two days. Zeit. des Œst. Apoth. Ver., 1873, No. 5.

Pure Muriatic Acid is prepared as follows from impure fuming muriatic acid, by E. Zettnow: Crude muriatic acid, of specific gravity 1.16, free from iron, is treated with chlorine-water, or solution of chlorinated lime, to oxidize any sulphurous acid it may contain, until a diluted portion of the acid no longer reacts upon iodide of potassium and starch-paper; 50 grammes of commercial salt of tin is then added for every 10 to 12 kilogrammes of the acid, which is allowed to stand in a warm place at a temperature of 35° to 40° C. (= 95° to 104° F.). At this temperature the separation of arsenic takes place in the course of twenty-four hours, while at ordinary temperatures three to four days would be required. The acid is then distilled over a little clean, sharp sand and common salt, the product being perfectly pure muriatic acid. Apoth. Zeit., 1872, No. 37.

Th. Dietz prepares pure muriatic acid by diluting the crude acid to 1.13 specific gravity, passing sulphuretted hydrogen through it, whereby arsenic, chlorine, and sulphurous acid are removed, and the ferric chloride is converted into ferrous chloride. Next morning the precipitate is filtered off through a double filter, and the acid liquid is subjected to distillation in a glass retort, the first portions of distillate, as also that

passing towards the close being rejected; the first because it contains HS, the last because it is apt to contain ferric chloride. Amer. Journ. Pharm., 1872, p. 299, from N. Jahrb. f. Pharm.

A delicate test for the presence of sulphurous and arsenious acid in hydrochloric acid is given in the German Pharmacopœia. A few small pieces of pure zinc are covered by the hydrochloric acid diluted with 2 parts water; the upper part of the tube is filled with cotton, moistened with a solution of subacetate of lead, and the mouth of the tube is covered with filtering-paper dipped in a solution of nitrate of silver. In case of the presence of either of the above-mentioned acids, the cotton, as well as the filtering-paper, becomes blackened after the evolution of gas has lasted about half an hour. One eighth milligramme of AsO_3 can be detected in 1000 grammes of muriatic acid. Pharm. and Chem. Rec., Jan., 1873, p. 22, from Chemist and Druggist.

According to J. B. Oster, the presence of arsenic in muriatic acid is determined readily, rapidly, and as beautifully as by Bettendorf's method, if smooth strips of perfectly pure tinfoil are placed in the muriatic acid, which is then boiled and allowed to cool. The smallest trace of arsenic colors the liquid and the foil, while in its absence, and in the absence of chloride of iron, the foil remains bright, and in any event the liquid remains clear. Apoth. Zeit., 1872, No. 27, from Phar. Cent. Halle.

IODINE.

Iodine.—The peculiar red color produced when a drop of sulphuric acid is allowed to flow into solution of iodine in iodide of potassium, has induced Carl Krauss to institute some experiments, with a view to the determination of the cause. It was observed the iodine is more or less soluble in all acids that were employed—mineral as well as organic. In sulphuric acid iodine is dissolved with a handsome brick-red color (1 gramme of iodine in 150 cubic centimetres concentrated sulphuric acid). Upon long standing pulverulent iodine separates, leaving the supernatant acid lighter in color. When

sulphuric acid is added to a solution of iodine in iodide of potassium, aqueous or alcoholic, the liquid becomes turbid and red-brown, and deposits gradually amorphous iodine, which owing to its peculiar condition, is more readily soluble in water than crystalline iodine. Nitric acid has the same effect as sulphuric acid. Hydrochloric acid dissolves, even at common temperatures, large quantities of iodine, producing a dark-red solution, which does not deposit. Phosphoric acid dissolves it slowly in the cold, more rapidly when heated, producing a yellow solution, such solutions being also produced by acetic, citric, and tartaric acids. The most remarkable fact in connection with the solution of iodine in sulphuric and phosphoric acids is, that if the solutions are sufficiently acid, they fail to blue solutions of starch. When the acid is deficient, the color will appear after dilution, but its appearance may be prevented by the addition of an excess of acid. Muriatic acid and the organic acids do not prevent the usual iodide of starch reaction, and in all instances iodine may be determined by the well-known color-test with bisulphide of carbon. N. Rep. f. Pharm., 1872, No. 7, p. 385.

E. Sonstadt has discovered that the addition of an alkaline permanganate to an iodide solution converts the iodide into iodate, provided that sufficient free alkali or alkaline carbonate is present to prevent the liberation of iodine; that neither chlorides, bromides, or other salts that ordinarily occur with the iodides, interfere with the transformation of the iodide, or are acted upon by the permanganate, and that even organic matter does not interfere if the permanganate is added in sufficient excess. This fact he has found very serviceable for the estimation of iodine in kelp liquors, mineral waters, &c.; the process adopted consisting in adding to the iodide solution, previously rendered alkaline, if not already so, solution of permanganate of potassium, until the liquid retains a slight but permanent tint of the permanganate. It is then filtered, a small portion of a sulphate is added if it does not already contain any, and this is followed by the addition

of chloride of barium in slight excess. The precipitate is collected upon a filter, is washed, heated with solution of sulphate of potassium in excess, and the solution so produced contains the whole of the iodine in the form of iodate of potassium, from which the quantity may be estimated by the usual methods. The author claims that in this process the transformation of iodide into iodate is complete; the precipitation of the iodate by the barium salt is complete; and the decomposition of the iodate of barium by heating with solution of sulphate of potassium in excess is complete. Chem. News, Oct. 11, 1872; Amer. Journ. Pharm., 1872, p. 553.

Tessier finds that iodine, if in solution in liquids containing tannin which possess the property of rendering its detection by the common reagents impossible, may be detected by the addition of solution of perchloride of iron. By inverting a funnel, coated with starch paste, over a vessel containing a liquid so treated, the presence of iodine is evidenced upon heating to 30° C. (= 86° F.). Watch-glasses may be used as containing vessel and funnel. Zeit. f. Anal. Chem., 1872, p. 313.

Campani has found that the iodine reaction proposed by Peloggio, which depends upon the electrolysis of the liquid, to which starch paste and hydrochloric acid has been added, is less sensitive than the usual reactions by means of bromine-water and starch or bisulphide of carbon. Zeit. f. Anal. Chem., 1873, No. 1, p. 93.

The moisture in commercial iodine, frequently amounting to 20 per cent., is best determined by dissolving the iodine in a small graduated tube in bisulphide of carbon. The water separates upon the surface, and its amount is then readily ascertained.

BROMINE.

Bromine.—The congealing-point of bromine has been found by H. Baumhauer to be —24.5° C. (= —12.1° F.). The statements in works upon chemistry vary between —7.3° and —22° C. (= + 18.3° and + 1.4° F.), and doubtless are due

to the presence of water, by which the freezing-point of bromine is raised in consequence of the formation of hydrate. Solid bromine is a red-brown crystalline mass. Amer. Journ. Pharm., 1872, p. 452; from Zeit. f. Chem.

FLUORINE.

Hydrofluoric Acid.—The inconvenience experienced when preparing hydrofluoric acid from fluor spar by the action of sulphuric acid, consisting in the formation of an exceedingly hard, rock-like compound, which is difficult to remove from the platinum retort, is, according to A. P. S. Stuart, easily avoided by mixing the fluor spar with an equal weight of gypsum, and then the proper quantity of sulphuric acid. After the operation the contents of the retort will be found in a pasty condition and easily removable. Am. Journ. Pharm., 1872, p. 322, from Scientific American.

PHOSPHORUS.

Phosphorus.—It has been observed by M. F. Moigno that a solution of phosphorus in bisulphide of carbon, when poured upon fine-powdered chlorate of potassium, produces very violent explosion. The experiment must be made with very small quantities. Journ. de Pharm. et de Chem.

Mr. D. A. Van Bastélaer proposes the following method for obtaining phosphorus in the metalloid state from the contents of the stomach or other substances supposed to contain it in the metalloid state:

The substance under examination is mixed with rectified ether and agitated violently in a closed bottle; after several hours the ether is removed, and the process is repeated twice. To the mixed ethereal solution a little water is added and the mixture is allowed to evaporate spontaneously; after which the residue is heated to about 130° to 140° F., by which phosphorus, if present, assumes globular form. The globule, mixed with fat, is removed, treated with ammonia of 21° several times, to remove the fat, and is then washed, first with water acidulated with sulphuric acid, and finally

with distilled water. So obtained, the phosphorus is somewhat soft, but possessing otherwise all its physical and chemical characteristics; it is in criminal cases the truest corpus delicti.

The observation of Personne that common oil of turpentine—containing oxygen and water—acts as an antidote to phosphorus, is confirmed by the experiments of Koehler and Schimpf. Experiments upon twenty-five animals with doses of phosphorus varying from 0.006 to 0.09 grammes, followed by oil of turpentine up to 4.5 gramme doses, resulted favorably in all instances. Pure oil of turpentine does not possess this property, the oxygen contained in the common oil being necessary to induce the formation of a compound which they name *turpentin-phosphorous acid*, a compound which is harmless. (See Organic Chemistry, in this report.) Pharm. Centralhalle, 1872, No. 30.

Trisulphide of Phosphorus is characterized by Shering as follows: It forms gray-yellow, crystalline, odorless masses, which, when exposed to dampness, acquire the odor of sulphhydric acid, the compound being decomposed by water into phosphorus and sulphhydric acids. It may be sublimed when air is excluded, but in the presence of air it is, when heated, inflammable.

The Pentasulphide of Phosphorus resembles the above in appearance, but is distinguished by permitting its melting and subliming in air, and that in contact with water it is decomposed with formation of PO_5, S, and SH. N. Rep. f. Pharm., No. 5, 1873, p. 309.

Phosphoric Acid.—The separation of phosphoric acid from lime, alumina, and iron, is proposed by G. Ville, by the following method: A solution of the phosphate in hydrochloric acid is treated with citric acid, and afterwards with ammonia in excess. Chloride of magnesium is then added, when a precipitate of ammoniophosphate of magnesium is formed, is collected upon a filter, washed thoroughly with ammoniacal water, and dissolved in a little nitric acid. The quantity of

phosphoric acid is then determined by volumetric solution of acetate of uranium. By using an excess of chloride of magnesium in the above process, the phosphoric acid is precipitated as ammoniophosphate of magnesium rapidly and completely, and the solvent action of citrate of calcium and citrate of magnesium is completely neutralized. Bullet. de Pharm., Sept. 1872.

Syrupy Phosphoric Acid is proposed by Mr. R. Rother as convenient of such strength that 1 troy ounce shall be represented by 1 fluid ounce. Eight troy ounces of glacial acid is allowed to dissolve in ½ pint of water, 2 drachms nitric acid is added, and the solution evaporated at a moderate heat until fumes of nitric acid cease to be evolved. The conversion into tribasic phosphoric acid is then effected, and the solution brought to the measure of 8 fluid ounces. Pharm. and Chem. Rec., May, 1873, p. 132.

Pyrophosphates.—The conversion of pyrophosphates into phosphates may, according to Prinvault, be effected by acids. If sulphuric acid is used, the cause of the transformation is the production of an alkaline phosphosulphate; under boric acid, a phosphoborate is formed. Am. Journ. Pharm., 1872, p. 451; from Journ. de Pharm. d'Anvers, 1872.

BORON.

Borax.—By experiments made in 1857 and 1858, Jacquez found borax and borate of ammonium to prevent and destroy moulding, and to conserve animal substances perfectly. He used the salts in the form of solution—100 parts containing 5 to 6 parts borax, or 10 to 12 parts borate of ammonium; and he suggests that such solutions will answer an excellent purpose in preserving meat, hides, &c., and for embalming. Journ. de Pharm. et de Chimie, 1873, March. (See also Ferments, in this report.)

SILICON.

Silicic Acid.—R. Pribram's researches prove that silicic acid is *in all conditions* more or less soluble in aqueous ammonia.

His results, differing so greatly from the former acceptance, have induced Aug. Sonchage to repeat the experiments of Pribram, and he finds them perfectly correct. In ammonia-water of 0.96 sp. gr., corresponding to 9.75 per cent. ammonia, the author found gelatinous silica readily and rapidly soluble, 1 part requiring 158 parts of ammonia-water. Hydrated silicic acid, dried at a temperature of 100° C. (=212° F.), required, on an average, 261.5 parts; silicic acid, heated to redness, required 280 parts; and crystaline silica required 12097 parts of aqueous ammonia, of the above strength, for complete solution. Zeitschr. f. Anal. Chem., 1872, No. 2, p. 179.

Silicate of Sodium.—The results of various experiments made by Picot prove silicate of sodium to be a decided antiputrefactive, even when very small quantities are used, and that it retards fermentation, and opposes the transformation of glycogen into glucose. Journ. de Pharm. et de Chimie, February, 1873. (See also Ferments, in this report.)

CARBON.

Carbon.—Purified charcoal may, under favorable circumstances, absorb nearly its own weight of gaseous chlorine, the absorption being accompanied by the development of considerable heat. If hydrogen is passed through such charcoal, completely excluded from light, muriatic acid gas is formed, and passes off with excess of Cl. The temperature sinks at the same time. Charcoal charged with chlorine decomposes water with formation of muriatic acid and carbonic acid. Apoth. Zeit., 1873, No. 8, from Ber. d. d. Ch. Gesell., 1873, No. 2.

Animal Charcoal.—Graeger prepares a very active animal charcoal as follows: Commercial animal charcoal is boiled for some time with 4 to 6 parts of a 4 to 5 per cent. solution of soda, and is then allowed to settle, which requires from three to four days. The supernatant liquid is decanted, the residue is mixed with a like amount of hot water, and again allowed to settle. By this treatment the sulphates are decomposed and removed, which, if present to a considerable extent, inter-

fere with the proper purification. After the waste water has been decanted, the charcoal is transferred to a large porcelain vessel, and treated with an excess of hydrochloric acid and water, using sufficient acid to prevent the formation of a precipitate upon the addition of a little ammonia to a portion of the filtered liquid. A large quantity of spring-water is now added, the charcoal is allowed to settle, the supernatant liquid is decanted, and the residue is washed several times with acidulated spring-water. Finally, it is collected upon a filter, thoroughly washed with distilled water, and dried at a temperature of 100° to 120° C. (= 212° to 248° F.). 100 parts of crude yield 20 parts of dry purified animal charcoal, in the form of an exceedingly light, soft, black powder, of very superior decolorizing property. The operation simply requires patience and very little labor; the washing is, under all circumstances, better conducted by decantation than upon a filter. Apoth. Zeit., 1873, No. 7.

According to Collas, hydrated phosphate of calcium has great affinity for coloring substances, infusion of litmus or decoction of cochineal being entirely decolorized by it. He therefore considers it useless to remove the phosphate of lime from animal charcoal, as it contains two decolorizing substances, which, far from damaging each other, double their action by their union. Journ. de Pharm. et de Chim., Oct. 1872.

C. Wernekinck, starting from previously known facts, frames an hypothesis to account for the action of animal charcoal in decolorizing vegetable solutions, and in absorbing lime from a solution of sugar lime. He connects the undoubted fact that such charcoal absorbs and condenses large quantities of atmospheric gases with the powers named, by assuming that the decolorizing power is due to the oxidizing power of condensed oxygen, and the lime-absorbing action to the CO_2 contained in the power; but he does not quote experiments in support of his views. Dingl. Polyt. Journ., cciii.

Contradictory to the above views, the abstractor in Journ.

Chem. Society states that animal charcoal, deprived of its gases by heating to redness in a Sprengel vacuum, is capable of decolorizing a solution deprived of dissolved air (and retained in vacuo) as perfectly as the ordinary material. Pharm. Journ. and Trans., 1872, July, p. 48.

Dr. J. B. Schober has experimented with a view to determine a method of ascertaining the decolorizing value of animal charcoal, and recommends the use of indigo solution for this purpose. The method adopted by the author is a modification of that recommended by Bussey. The charcoal is boiled with an excess of titrated solution of indigo carmine, and the excess of the indigo carmine solution titrated back with permanganate of potassium. The results were verified by decolorizing some caramel solution, the quantity required of the five samples of charcoal examined to decolorize a given measure of caramel solution corresponding with the decolorizing power indicated by the indigo. A method having been proposed for the determination of the value of animal charcoal, which is based upon the assertion that the absorbing power of charcoal for lime indicates accurately its decolorizing power, the author also determined the amount of lime that a given quantity of each of the charcoals was capable of absorbing from solution of saccharate of lime, and he has determined that this method will only approximate the value of charcoal, but will not yield perfectly accurate results, and that therefore its decolorizing power should be determined direct. The following is a summary of the author's results:

	Decolorizing power.	Lime-absorbing power.
1. Animal charcoal, which had been used, and was regenerated, ...	1	1
2. Animal charcoal from a cabinet, ...	1.6	1.1
3. Animal charcoal from a sugar refinery, . .	1.8	1.7
4. Animal charcoal purified, purchased, . . .	5	1.9
5. Animal charcoal purified by the author, . .	5	1.8

N. Rep. f. Pharm., 1873, No. 5, p. 257.

Liquid Carbonic Acid is found by Cailletet to be a nonconductor of electricity, and that it is not decomposed by the

spark of an induction coil. It dissolves neither NaCl, CaCl, $NaOSO_3$, $KOSO_3$, $CaOCO_2$, S, nor P; but dissolves iodine sparingly, forming a violet-colored solution. Petroleum dissolves 5–6 volumes of liquid carbonic acid; ether mixes well in all proportions; fixed oils are sparingly soluble in it; paraffin and stearic acid insoluble in it. It is not changed by sodium. Apoth. Zeit., 1872, No. 52.

Chloride of Carbon.—According to experiments, chloride of carbon unites in definite proportions with alcohol; when 30.8 parts of chloride of carbon are mixed with 4.6 parts of alcohol, the mixture distilled and the product passing at 66° C. (= 150.8° F.) is collected. The product is a colorless, transparent, mobile liquid, of an agreeable odor, a density of 1.44 at 13° C. (55.4° F.) under a pressure of 0.755, and a boiling-point of 66° C. (= 150.8° F.). It is unalterable in air, slowly volatilized, and burns with difficulty. By water, and sulphuric and nitric acids it is decomposed, chloride of carbon being deposited. It acts as an anæsthetic. Comparative experiments made upon a dog prove that it acts less intensely than chloride of carbon or chloroform. Am. Journ. Pharm., Feb. 1873, p. 75, from Bull. Thérap.

CYANOGEN.

Hydrocyanic Acid.—Julius Post and H. Hübner have observed that nitro- and dinitrobenzol yield hydrocyanic acid when treated with caustic alkalies; the former with fusing potassa, the latter with boiling dilute solutions of potassa. Wöhler, as early as 1828, noticed the production of this acid from picric acid by treatment with baryta-water. The authors intend to investigate other nitro- and amido-compounds. Amer. Journ. Pharm., 1872, p. 352; from Ber. d. d. Ch. Gesell.

Ferrocyanides.—In a preliminary communication (Chem. Cent. Bl., 1873, No. 5), G. E. Alexander Schnacke gives the following observations:

1. All ferrocyanides differ, even when prepared from the same metallic salt, according to their preparation, from the

yellow prussiate of potassium, by the addition of excess of the metallic salt, or by the addition of an excess of yellow prussiate to the metallic salt.

2. All ferrocyanides prepared with excess of metallic salt contain no potassium, or but traces, while all that are prepared with excess of the yellow prussiate contain considerable quantities of it.

Ferrocyanide of Potassium.—Deias prepares this by dissolving carbonate of potassium in the smallest possible amount of water, adds 20 per cent. of powdered charcoal, and evaporates; the mixture is brought in contact with a mixture of nitrogen and carbonic oxide (air, which, by the aid of charcoal, has been deprived of oxygen), by which cyanide of potassium is formed. This is converted into ferrocyanide of potassium by the usual methods. By the use of appropriate apparatus the process becomes nearly continuous. Apoth. Zeit., 1873, No. 7.

The suint, which forms almost the third part of raw wool, has formerly been used exclusively for the manufacture of potash. It has been found, however, that when suint is heated, the residue is composed of an intimate mixture of nitrogenous carbon and carbonate of potash, and that, therefore, the suint is very profitably employed in the manufacture of prussiate of potassium. Chem. News, 1873, p. 183.

Ferridcyanide of Potassium.—Ferdinand Rhien prepares red prussiate of potassium as follows: To a cold solution of yellow prussiate of potassium, common muriatic acid is added in the proportion to form sufficient chlorine to abstract one atom of potassium from two atoms of the salt, and to leave slight excess. A clear solution of chlorinated lime is then added until sesquichloride of iron no longer indicates the presence of yellow prussiate. The solution is then treated with carbonate of calcium, to neutralize excess of acid, is filtered and concentrated. The first crop of crystals, when washed with a little water, is perfectly pure; while the subsequent portions are readily purified from traces of lime by recrystallization. The advantages of the process are, that the conversion into ferridcyanide takes place at the ordinary temperature; that

but one filtration is necessary; that no precipitate needs to be washed, and that the entire quantity of ferridcyanide formed is readily obtained, with but trifling loss. Pharm. Centralhalle, 1872, No. 37.

Prof. Böttger finds that when a piece of pure palladium-foil is introduced into a solution of ferricyanide of potassium, the ferricyanide is reduced to ferrocyanide. A solution of 5 decigrammes of ferricyanide of potassium in 100 c.c. of distilled water, exposed to the influence of palladium-foil in a dark place for ten minutes, will indicate, upon the addition of pure solution of a persalt of iron, the presence of ferrocyanide of potassium. Thallium, magnesium, and arsenicum produce the same deoxidizing effect; while platinum, zinc, cadmium, aluminium, copper, indium, lead, cobalt, silver, mercury, tin, bismuth, antimony, gold, tellurium, manganese, and iron, are perfectly indifferent. Pharm. Centr. Halle, 1872, No. 49, p. 441.

Sulphocyanide of Potassium.—Mr. William Skey states that when common flowers of sulphur and pure cyanide of potassium are allowed to react upon each other in a vessel from which air is excluded, the sulphur will combine with the cyanide, and sulphocyanide will be formed. It is best to suspend the sulphur in a moist state in a porous bag near the top of the cyanide solution, when in a few days the combination is completed. Chem. News, 1873, p. 179.

POTASSIUM.

Potassa.—Wöhler's method of preparing caustic potassa, by calcining the nitrate with metallic copper, yields a very pure alkali, with the exception that it always contains a little oxide of copper. Polacci proposes to substitute iron for the copper, having by experiment obtained results which exceeded his expectation. One part of nitrate of potassium is mixed well with two or three parts of iron filings, and is, in an iron crucible, brought to a red heat; when cool the mass is extracted by water, which yields, by the usual methods of filtration and evaporation of caustic alkaline solutions, perfectly

pure hydrate of potassium. The reaction occurs according to the following equation: $6KO,NO_5 + 10Fe = 3KO + 5Fe_2O_3 + 6N$.* Gazetta Chimica Italiana, 1872.

Potassa is separated from *soda*, by Theodore Schloessing, by a method which depends upon the insolubility of perchlorate of potassium in alcohol. The solution of the two alkalies, which must contain them in the form of chlorides or nitrates, is concentrated in a weighed porcelain capsule, and a mixture of aqua regia and perchlorate of ammonium is added. By the reaction of the aqua regia upon perchlorate of ammonium, a mixture of perchloric, nitric, and hydrochloric acids results, and the perchloric acid, having a stronger affinity for the alkalies than the other acids, converts them into perchlorates, which so remain, when the mixture is evaporated and heated until white vapors cease to be given off. When cool the residue is washed repeatedly with small quantities of alcohol of 36 per cent., decanting each time upon a filter, which serves to retain the particles of potassium salt mechanically suspended. To remove the last traces of sodium salt, which adheres with tenacity to the potassium salt, the latter is dissolved in a small quantity of water, evaporated to dryness, and again washed several times with alcohol. Finally it is determined by solution in boiling water, evaporation to dryness, and heating to about 250° C. (=482° F.), while the alcoholic solution of the sodium salt is evaporated and estimated as sulphate. Zeitschr. f. Anal. Chem., 1872, No. 2, p. 179.

Kolbe has tested the reliability of the above method, and finds that it must be accepted with great caution. Fahlberg, who made the experiments for Kolbe, finds that 100 c.c. of 36 per cent. alcohol, will dissolve at a temperature of 17° C. (= 62.6° F.), 0.53 grammes of the potassium salt. The possibility of an error by the printer, induced him to try the solvent effect of "63 per cent." alcohol, 100 c.c. of which, at 17° C. still dissolved 0.265 grammes of the salt. Ibid., p. 193.

* This calculation is evidently incorrect; should be $3KO,NO_5 + 10Fe = 3KO + 5Fe_2O_3 + 3N$.—C. L. D.

Bromide of Potassium.—Falières finds it preferable to purify the materials for preparing bromide of potassium, rather than to purify the bromide subsequently. The *bromine* is readily purified by shaking it with solution of bromide of potassium, which removes all the contaminating elements, such as chlorine, iodine, &c. Pure bicarbonate of potassium should be employed. Iodine, contaminating bromide of potassium, is readily removed by boiling the salt with aqueous solution of bromine, the iodine is volatilized first, and any excess of bromine when evaporating to dryness. The presence of free potassa or of carbonate of potassium is rendered evident when a very small crystal of iodine is placed in its solution, which if free from alkali is colored yellow, while when alkali is present the solution remains colorless. Iodine is best determined by the process of Bonis, for detecting minute quantities in mineral waters. A few drops of the contaminated solution is introduced into a test-tube, a few drops of solution of sesquichloride of iron is added, and heat is applied to gentle ebullition. The iodine is precipitated, while the bromide remains intact. Starch-paper is blued when introduced into the tube. *Chloride of potassium*, which according to Falières frequently contaminates the bromide, is determined by a process simultaneously recommended by him and by Baudrimont, the process depending upon the fact that a given weight of the chloride is capable of decomposing a much larger quantity of nitrate of silver, than a corresponding weight of bromide. One gramme bromide of potassium requiring 1.427 grammes nitrate of silver, while 1 gramme of chloride requires 2.299 grammes, it is evident that if the latter contaminates the bromide, a relatively larger quantity of nitrate of silver will be required for complete decomposition. The determination is made by titration, carefully adding solution of nitrate, until the quantity corresponding to pure bromide has been added, and then ascertaining the further quantity required, which furnishes the necessary data for calculating the amount of chloride present. The presence of iodides, carbonates, sulphates, and nitrates, render the test useless. English bromide of potassium is occasionally contaminated with

nitrate of sodium. Bromate of potassium is detected by adding colorless muriatic acid, which remains colorless with bromide, but becomes yellowish-green with bromate. Pharm. Centralhalle, 1872, No. 31 and 32.

Hager recommends for the detection of iodide in bromide of potassium that a few crystals be powdered, 0.1 gramme of the powder dissolved in 10–12 c.c. ammonia-water (10 per cent.), and then a drop of solution of nitrate of silver added, and the mixture well shaken, when, if the bromide is pure, any turbidity formed will disappear, while when it remains it is owing to the formation of iodide. The reaction is exceedingly distinct.

The determination of the presence of chlorides, recommended by Hager, depends upon the fact that bromide of silver is but sparingly soluble in cold, dilute solution of carbonate of ammonium, while the chloride is freely soluble. 0.1 gramme of bromide of potassium and 0.26 grammes of nitrate of silver are separately dissolved in water (each in 3 to 4 c.c.), are mixed in a test-tube, 2 c.c. nitric acid is added, and the mixture is violently agitated. The precipitate is allowed to settle, which it does rapidly, the supernatant liquid is decanted, and the precipitate is washed once with water, is shaken for two minutes with a mixture of 3 c.c. of solution of carbonate of ammonium (Pharm. Germ.), and 3 c.c. of water, and filtered. The filtered liquid will assume a faint opalescence upon the addition of nitric acid if the bromide is pure, but if it has contained chloride, milky turbidity is caused by the separation of chloride of silver. Pharm. Centralhalle, 1872, No. 33.

Iodide of Potassium.—Lepage bases a method for the examination of iodide of potassium for bromide upon the solubility of bibromide of mercury. To a certain quantity of the iodide, which must be free from chloride, carbonate, and iodate, solution of bichloride of mercury, of known strength, is added, until all the iodine is precipitated as biniodide of mercury. The difference between the quantity of bichloride of mercury used, and the quantity that would be necessary if the iodide

was pure, furnishes the data necessary to the determination of the quantity of bromide. The presence of bromide in the supernatant liquid is determined by concentrating, liberating the bromine by chlorine, and agitating with bisulphide of carbon. Journ. de Pharm., July, 1872.

Carbonate of Potassium is prepared largely in France from the residues after the fermentation of (beet-sugar?) molasses. Up to within a few years the principal source of trouble, in the endeavor to obtain a *pure white* article, existed in the presence of cyanides, which were found exceedingly difficult to remove. This difficulty has now been overcome, the product obtained, by a somewhat complicated process, being pure white and of great strength. Am. Drug Circ., Nov. 1872, p. 195; from Mech. Magazine.

Chlorate of Potassium.—According to F. Moigno, if chlorate of potassium, in fine powder, is spread evenly upon paper, and is then moistened with a solution of phosphorus in bisulphide of carbon, the evaporation of the bisulphide of carbon is followed by a violent explosion. The explosion is similar to that produced when a small piece of phosphorus and a little chlorate of potassium are struck with a hammer. On account of the violence of the explosion, the experimenter should use but minute quantities. Pharm. Centr. Halle, 1872, No. 52, p. 477.

Sulphate of Potassium, which, according to E. Sonstadt, occurs in commerce usually in the form of a double salt composed of 3 equivalents of sulphate of potassium and 1 equivalent of sulphate of sodium, is recommended to be purified as follows: 644 parts of the salt are dissolved in boiling water, and 149 parts of chloride of potassium are added in small portions. Pure sulphate of potassium is deposited at once, and upon cooling the liquid a further quantity is obtained. The mother liquor will yield 3 or 4 more crops of crystals before they are saturated with the chloride of sodium, formed by double decomposition. N. Jahrb. f. Pharm., Feb. 1873, p. 93.

SODIUM.

Soda.—Polacci recommends its preparation from nitrate of sodium by the same process recommended by him for obtaining pure hydrate of potassium from nitrate of potassium. (See Potassium, in this report.)

Soda and its Carbonate.—A method is proposed for the determination of caustic soda, along with carbonate, which depends upon the observation that curcuma-paper is turned *yellowish-red* when caustic soda is present with the carbonate; but when the caustic soda is exactly neutralized by an acid, the carbonate produces a carmine-red color, and may then be determined in the usual way. It is alleged that this method is sufficiently accurate to determine 0.5 per cent. of caustic soda when present along with carbonate (?). Zeitschr. f. Analyt. Chem., 1872, p. 198.

AMMONIUM.

Ammonia.—R. Böttger regards corrosive sublimate, proposed as a reagent for ammonia by Bohlig, the most sensitive yet proposed; it enabling the detection of $\frac{1}{2000000}$th part in a liquid. When it exists in saline combination, the addition of a few drops of chemically pure solution of potassa will enable its detection. Ammonia is readily detected in illuminating gas by allowing it to pass for a few minutes through a solution of corrosive sublimate. Zeitschr. d. Œst. Apoth. Ver., 1873, No. 3.

Iodide of Ammonium.—The proportions of iodide of potassium and sulphate of ammonium directed by the Pharmacopœia are, according to the calculations of Mr. Charles Rice, incorrect, the iodide being in excess. The author considers it safer that an excess of sulphate of ammonium be employed, the proportion recommended by him being 867 grains to 1920 grains of the iodide. Am. Journ. Pharm., June, 1873, p. 249.

Bromide of Ammonium.—Mr. Charles Rice regrets that the Pharmacopœia revisers did not adopt a formula for this salt similar to that adopted for iodide of ammonium, and recom-

mends the following formula for its preparation: Dissolve 4 troy ounces of bromide of potassium in 6 fluid ounces of boiling water, and 3 troy ounces of sulphate of ammonium in 4½ fluid ounces of boiling water. Mix the solutions while hot, and allow to cool. Then add 1½ ounces of alcohol, and set it aside for 24 hours. Pour off the clear liquid, wash the precipitate with a small quantity of a mixture of 1 part of alcohol and 4 parts of water, and concentrate to the point of crystallization. Am. Journ. Pharm., June, 1873, p. 249.

BARIUM.

Bromide of Barium.—For the purpose of preparing the various bromides of the alkaloids which have lately become so popular, Mr. George McDonald prepares a solution of bromide of barium, his aim being evidently to point out a convenient method of preparing the various bromides from materials ordinarily found in the shops. The first step is the preparation of

Hydrobromic Acid.—One ounce of bromine in 8 ounces of water, contained in a pint jar, is treated with HS, until the bromine is entirely converted into hydrobromic acid; the HS delivery-tube reaching to the surface of the bromine, and the elimination being slow in the beginning. The acid solution is filtered, and gently heated until it has lost the odor of HS.

Carbonate of Barium is then made by adding to a boiling solution of 2 ounces of chloride of barium in a pint of water, an excess of solution of carbonate of ammonium, to which a little ammonia (aqua ?) has been added; transferring to a filter, washing with water until the washings cease to become turbid with nitrate of silver solution containing a little nitric acid in excess, and the magma is then removed from the filter, and brought to the consistence of thick milk.

Bromide of Barium is now prepared by adding small portions of this milky carbonate of barium to the solution of hydrobromic acid, until about three-fourths has been added, then applying gentle heat, and agitating vigorously. Small portions of carbonate of barium are added from time to time

until the liquid no longer reacts acid upon litmus; the solution is then filtered, and evaporated to 4 fluid ounces, in which condition it is employed for the purposes above indicated. Am. Journ. Pharm., 1872, p. 447.

CALCIUM.

Bromide of Calcium.—Mr. George McDonald recommends the following process for its preparation, as both ready and convenient to the apothecary: Dissolve 4 ounces of bromide of ammonium in a pint of boiling water, contained in a flask, bring to the boiling-point, add milk of lime in small quantities as long as ammonia is evolved, filter the solution, and evaporate to dryness. The salt being quite deliquescent, it requires to be kept in well-stoppered bottles. The author cautions against the use of lime containing magnesia. Amer. Journ. Pharm., 1872, p. 449.

Prof. Maisch, referring to the above, states that care must be taken to avoid the use of excess of caustic lime, since a basic bromide (oxy-bromide) of calcium, having a strong alkaline reaction, is very readily formed.

Phosphate of Calcium.—Reichardt, in the following, illustrates its solubility and crystallizability. To a very dilute solution of chloride of calcium, solution of phosphate of sodium is added in small proportion. If the water with which the solutions have been made contain free carbonic acid, the precipitate produced is again dissolved upon stirring; another portion of phosphate of sodium is added, when, upon passing carbonic acid into the liquid, the precipitate will again dissolve; this can be repeated several times; but, finally, a permanent crystalline precipitate forms, which, when well washed and dried, will be found, under the microscope, to consist of well-defined oblique-rhombic tables, of composition $2CaO,HO,PO_5 + 4HO$. Apoth. Zeit., 1873, No. 7.

MAGNESIUM.

Magnesia.—Th. Scherer separates magnesia from potassa and soda, by converting them into chlorides, evaporating

their solution, in which ammonia may also be contained, in a platinum crucible, not quite to dryness, adds a considerable proportion of perfectly pure oxalate of ammonium, and heats the mixture gradually to low redness, being careful to expose all parts of the saline mass to the same temperature. The mass is then boiled in water, filtered, and washed. The filter retains carbonate of magnesium free from carbonated alkalies. The process depends upon the formation of oxalate of magnesium, which, by the heating, is converted into carbonate. If, instead of oxalate, carbonate of ammonium is used, the separation does not succeed, even if a large excess is employed. Zeitschr. f. Analyt. Chem., 1872, p. 197.

Mr. R. V. Mattison has met with heavy calcined magnesia which was largely adulterated with Rochelle salt, as proven by an analysis made by him. Amer. Journ. Pharm., Jan. 1873, p. 13.

MANGANESE.

Protoxide of Manganese.—The older method for the quantitative determination of manganese as protoxide—which consists in heating its solution (which must not be too acid and must be free from ammonia) to near its boiling-point, decomposing by excess of solution of carbonate of potassium, boiling a few minutes, washing the precipitate formed with boiling water, first by decantation and then upon a filter, and finally drying it and heating to redness with access of air until the weight remains constant—having been rejected by R. Finkener as inaccurate, R. Fresenius had made experiments which led him to the following conclusions:

1. The precipitate always contains, even when most carefully washed, alkaline salt.

2. After heating the precipitate to redness, the alkaline salt may be completely washed out by water.

3. The filtrate often contains minute, but weighable, quantities of manganese, which may be secured by evaporation to dryness, and treating residue with boiling water.

4. The circumstance, however, that the inaccuracies of 1

and 3 compensate each other, permit of tolerable accurate results when conducting the determination by the old method.

5. Perfectly accurate results may be obtained when the solution is carefully precipitated, the precipitate is thoroughly washed, the washings are evaporated to dryness in a porcelain capsule, washing the residue thoroughly, collecting upon a separate filter, and incinerating both filters with their contents until a constant weight is attained. Zeitschr. f. Anal. Chem., 1872, p. 290.

Peroxide of Manganese.—Experiments made by R. Fresenius regarding the determination of manganese as peroxide led him to the following results:

1. From its—not too dilute—solution, containing acetate of sodium, and heated to 70° C. (= 158° F.), the manganese may be precipitated completely by means of chlorine; the more rapid, the greater its freedom from mineral acid. The treatment with chlorine is continued until the liquid becomes red, by the formation of permanganic acid, when the precipitation is complete. Upon the addition of a drop of alcohol to the hot liquid, the minute quantity of permanganic acid is readily reduced, and the last trace of manganese is precipitated.

2. If the precipitate, even after the most careful washing, is reduced to protoxide by heating to redness, the result is too high, owing to the presence of alkali and alkaline salt, and this cannot be removed from the protoxide, when even boiling water is employed for this purpose.

3. Therefore, when manganese is precipitated by chlorine from acetic solution, it becomes necessary to redissolve the precipitate, and to precipitate the solution, so obtained, by sulphide of ammonium or carbonate of sodium. Ibid., p. 295.

Chloride of Manganese.—F. W. Kreeke having observed that a solution of chloride of manganese, which was colorless when containing 8 to 10 per cent. of the salt, became gradually pink as the solution became concentrated until it contained 15 per cent., and then, as it became yet more concentrated, changed to orange-yellow, greenish-yellow, and finally green, ascribed the changes in color to the formation of

anhydrous salt, and so communicated his observation to the Society for the Advancement of the Medical Sciences of Amsterdam, section Natural Sciences. At a subsequent meeting of the Society, J. A. Kappers effectually contradicted this view, and proved that Kreeke had operated with a salt containing cobalt. Kappers had noticed the same peculiarity in chloride of manganese solutions, obtained by evaporating the residuary product of the preparation of chlorine from which the iron had been precipitated by carbonate of soda; but suspecting the presence of cobalt, he determined its presence by appropriate tests. The author repeated the experiments of Kreeke, following that author accurately, and found that solution of chloride of manganese so treated retained its rose color to the last. The author furthermore believes to have made the observation that chloride of manganese is less soluble at a boiling than at a lower temperature. Ber. d. d. Chem. Ges., 1872, No. 12.

Permanganate of Potassium.—Mr. Joseph P. Remington has met with a lot of permanganate of potassium, imported from Germany, in which the prismatic character of the salt was entirely wanting The crystals, when thrown in a heap, presented the appearance of a miniature coal-pile; when examined volumetrically they were found to be pure. Am. Journ. Pharm., Jan. 1873, p. 12.

Permanganate of Zinc has lately been used medicinally, and its preparation has been the subject of experiment by J. F. Martenson. It is readily prepared by double decomposition between sulphate of zinc and permanganate of barium, but the latter compound is so difficult to obtain in appreciable quantities, that the author prefers the use of *permanganate of silver*, which is decomposed by chloride of zinc. Permanganate of silver is prepared by the author by double decomposition, between hot solutions of 158 parts of permanganate of potassium in 500 parts of water, and 170 parts nitrate of silver in 200 parts of water, heating the mixed solutions for a short time and allowing to cool slowly. The permanganate of silver, separating in large proportion, is collected upon gun-

cotton in a funnel, is washed with a little cold water, and then redissolved in a small quantity of hot water, from which it is allowed to crystallize as slowly as possible. The crystals are thoroughly washed with cold water and dried with gentle heat. The mother liquors remaining in the first crystallization contain a small quantity of the silver salt, which may be obtained by concentrating and allowing to cool. The salt is soluble in 109 parts of cold water, and crystallizes readily. Having this salt the permanganate of zinc is readily prepared, but to insure complete success, the chloride of zinc should be prepared in solution by double decomposition between chloride of barium and sulphate of zinc. By double decomposition between the silver and zinc salts, the solution, being intensely dark purple, does not readily permit the recognition of complete decomposition, and it is therefore advisable to employ exact equivalents, = 227 parts permanganate of silver and 68 parts chloride of zinc. The filtered solution is concentrated on a water-bath to syrupy consistence, when upon cooling it congeals, forming a crystalline mass, which is divided into small fragments, and dried completely over sulphuric acid. So obtained, *permanganate of zinc* is of a black-brown color, possesses a metallic lustre, is freely soluble in water, exceedingly deliquescent, and possesses in general the reaction of permanganates. Pharm. Zeitschr. f. Russ., 1873, No. 3.

IRON.

Iron.—Dr. Elsner has determined that iron is volatilized at a temperature approaching 3000° C. (= 5432° F.). Wrought-iron exposed in a porcelain crucible to the temperature of a porcelain furnace, was found partly volatilized upon the inner surface of the cover, in the form of an iron gray very thin film. Apoth. Zeit., 1872, No. 52.

Ferrum Redactum of commercial quality has been examined by A. N. Little, who found the six samples examined all to contain a large percentage of oxide, which when calculated as magnetic oxide, was found to exist in the best samples to the amount of 49.16 per cent., while one sample contained

90.75 per cent. Traces of sulphates, chloride, sulphites, and carbides were found in each. Pharm. Journ. and Trans., Nov. 1872, p. 423.

Meteoric Iron.—According to Dr. O. Buchner, the enormous masses of meteoric iron, the largest weighing 21,000 kilogrammes, brought from Greenland in 1871, are, since their arrival in Stockholm, rapidly disintegrating. This fact, together with that, that portions of basalt are occasionally found inclosed in fragments of it, distinguish it from all other meteoric irons. It is proposed to preserve it in alcohol (!). Arch. f. Pharm., July, 1872, p. 71.

Iron in Vegetable Nourishment.—From the fact that the blood of all animals contains iron, it is evident that the vegetable substances, which the herbivorous and granivorous animals use exclusively, must also contain iron. M. Boussingault, who has ascertained the quantity of iron in various vegetable articles of food, draws from the above two conclusions:

1. That an animal, whose food is entirely free of iron, will without fail die, as its blood cannot be properly constituted.
2. That iron is as indispensable to vegetable as it is to animal life.

Eusèbe Gris first ascribed (in 1849) the chlorosis of the leaves to an absence or deficiency in iron salts, and Prince Salm-Horstmar caused chlorosis in oats to disappear, by imparting iron salts to the soil in which it was cultivated. Rép. de Pharm., June, 1872.

Hydrated Sesquioxide of Iron.—R. Rother proposes its preparation from sulphate of iron, by converting it as wanted into tersulphate, by the aid of sulphuric acid and chlorate of potassium. Eight troy ounces of sulphate of iron is dissolved in a mixture of 680 grains of sulphuric acid and 12 fluid ounces of water by moderate heat, 282.5 grains of chlorate of potassium is added, stirred until dissolved, and the solution is filtered. It is then precipitated by ammonia in the usual manner. Pharm. and Chem. Rec., Dec. 1872, p. 272.

Salts of Sesquioxide of Iron.—Mr. J. L. A. Creuse, having abundantly experimented, finds that as a rule, *all salts of sesquioxide of iron, without exception, soluble or insoluble, form combinations with the alkaline citrates, tartrates, and oxalates.* Such combinations are invariably green, whatever may be the color of the iron salt; they are all soluble in water, nearly insoluble in alcohol; they are all free from ferruginous taste, all perfectly stable, and miscible with preparations of Peruvian bark without decomposition. In all of them the presence of iron is so disguised, as not to be detected by chemical reagents, unless after the addition of strong acids or sulphhydric acid, both of which destroy the combination. Upon the basis of these results, the author has prepared, and suggests a number of preparations, among which tasteless iodide of iron and tasteless chloride of iron. See Am. Journ. Pharm., May, 1873, p. 214.

Protochloride of Iron.—R. Finkener, having stated in H. Rose's Handbuch der Analytischen Chemie, 6th ed., part ii, p. 926, that the detrimental influence of hydrochloric acid, when titrating protochloride of iron with permanganate of potassium, is entirely overcome by the addition of fluoric acid and sulphate of potassium, O. Follenius repeated the experiment, strictly according to Finkener's directions, and finds the statement erroneous, the hydrochloric acid having after such addition the same influence as without. Zeitschr. f. Anal. Chem., 1872, No. 2, p. 177.

Sulphate of Protoxide of Iron and Ammonium.—The assertion of Rheineck that this salt contains but 5 equivalents of water of crystallization, instead of 6 equivalents, as has been heretofore accepted, has induced E. Fleischer to institute a series of experiments, which prove Rheineck's assertion erroneous. Journ. f. Prackt. Chem., 1872, No. 10, p. 437.

URANIUM.

Chloride of Uranium.—O. Follenius finds that the presence of hydrochloric acid during the titration of uranium salts by permanganate of potassium, renders the result inaccurate, as it

does the result in the titration of iron salts under the same conditions; the titre being increased by the decomposing action of the hydrochloric acid upon the permanganate. Zeitschr. f. Anal. Chem., 1872, No. 2, p. 177.

CHROMIUM.

Chromic Acid.—E. Duvillier proposes the following method of its preparation: 100 parts chromate of barium is mixed with 100 parts of water, then 140 parts of nitric acid is added, and the mixture is boiled for ten minutes. It is then diluted with 200 parts of water, boiled again for ten minutes, and allowed to rest. Upon cooling, the greater part of the nitrate of barium crystallizes, and the supernatant liquid is decanted and concentrated to about the volume of the nitric acid originally employed. Upon cooling, a further quantity of nitrate of barium crystallizes, only leaving about 0.5 per cent. mixed with the acid liquor. This is decanted, treated carefully with sulphuric acid to remove remaining barium salt, evaporated to near dryness, again diluted with a little water, and again evaporated, and this alternate evaporation and solution is repeated several times to remove nitric acid. Finally the acid liquid is concentrated in vacuo to crystallization, after the method of Bolley. Zeitschr. d. Œst. Apoth. Ver., 1872, No. 36.

(The author being in possession of chromate of barium, why does he not use sulphuric acid at once, instead of adopting so tedious, and, under the circumstances, incomprehensible method?—C. L. D.)

Chromic Acid.—When the process of Warrington for the preparation of chromic acid in large crystals is followed (mixture of 1 volume of cold saturated solution of bichromate of potassa with 1½ volume sulphuric acid), the result is often not as expected, and the chromic acid fails to crystallize. According to Oscar Ficinus, it is under these circumstances best to evaporate the solution upon a water-bath until a portion, dropped upon a watch glass, forms crystals. If left

to itself two days, large, handsome needles are formed. Arch. f. Pharm., Jan. 1872, p. 23.

Chromates of the Alkalies.—Emil Fleischer, having rejected the yellow chromate of potassium as a volumetric agent for the determination of sulphuric acid, because of its property of absorbing carbonic acid, Dr. Mohr further investigated the subject, and justifies, by his experiments, the observation of Fleischer. When carbonic acid is passed into a solution of monochromate of potassium it is absorbed upon vigorous shaking, and the liquid assumes the red color of the bichromate; it was proven that under these circumstances bichromate and bicarbonate of potassium, were formed. Dr. Mohr had previously declared the bichromate a neutral salt, basing his opinion upon the fact that it will not decompose iodide of potassium, which is readily decomposed by the faintest trace of free chromic acid. That the monochromate reacts alkaline has already been stated by Gmelin. N. Rep. f. Pharm., 1872, No. 11–12, p. 741.

ZINC.

Sulphate of Zinc.—Iron is perfectly removed from sulphate of zinc by A. Jandous as follows: An excess of zinc is treated with dilute sulphuric acid, and the solution is digested upon a sand-bath with excess of the metal. One-twentieth of the solution is then precipitated with carbonate of soda, the precipitate is well washed, and the precipitated carbonate so obtained is then added in fractional portions to the remaining solution of sulphate of zinc, diluted with 2 volumes of water, with alternate addition of solution of tannic acid, as long as a violet tinge is produced after such addition. The process is best conducted in a procelain capsule, and by bringing the liquid in contact with the air by brisk stirring. The solution is filtered, acidified with a little sulphuric acid, and yields upon crystallization a salt perfectly free from iron. Fifteen ounces of commercial zinc required but 2 grains of tannin for complete purification. N. Jahr. Pharm.; Ch. Cent. Bl., 1872, No. 32.

CADMIUM.

Sulphide of Cadmium has been found by E. Schering adulterated with zinc white, which is easiest detected by treating the suspected article with strong warm vinegar for some time, by which the zinc is dissolved and recognized by the precipitate produced when an excess of soda is added to the filtered solution. The author had previously drawn attention to the use of sulphide of cadmium for coloring soaps yellow; the intensity of the color being so great as to make its use for that purpose economical, notwithstanding its high price, provided it is free from impurities that reduce its coloring powder. Such effect is produced by the adulterant above mentioned. N. Rep. f. Pharm., 1872, No. 6, p. 370.

COPPER.

Protoxide of Copper.—Prof. Bœttger recommends the following process for obtaining a handsome cinnabar red, *anhydrous* oxide of copper. Two parts of hydrate of potassium is dissolved in 16 parts of water, 1 part of starch sugar is added, and then 1 part of tartrate of copper. The mixture is exposed to a temperature of 60° C. (= 140° F.), in a porcelain capsule, until it has acquired a bright red color, and it is then mixed with a large proportion of water, which must be free from air. N. Jahrb. f. Pharm., Jan. 1873, p. 23, from Polyt. Notizbl.

LEAD.

Iodide of Lead.—Dr. Donato Tommasi draws attention to the solubility of iodide of lead in concentrated solution of acetate of sodium, 5 cubic centimetres of which dissolve 1 gramme in the cold and 2 grammes when hot. This solubility may be taken advantage of for detecting insoluble impurities in the iodide. Amer. Journ. Pharm., 1872, p. 331.

INDIUM.

Indium.—The soluble salts of indium are, according to J. Bayer, completely precipitated by bisulphite of sodium, and

he bases upon this property a method to obtain oxide of indium in the pure state. The sulphite of indium obtained is purified by dissolving it in sulphurous acid, filtering, and then boiling, by which the sulphurous acid is driven off and pure sulphite deposited. This is a basic salt, its composition being In_2O_3, $3SO_2 + In_2O_3 + 8HO$. It is a light, white, crystalline powder, readily dissolved by acids, with evolution of sulphurous acid. At 212° it loses 3 equivalents of water; at 536° it gives off sulphurous acid, and at a red-heat it is completely decomposed, leaving oxide of indium, colored gray by a small quantity of reduced indium. The hydrated oxide of indium may be obtained by boiling chloride of indium with nitrite of potassium, the oxide being precipitated and nitrous acid evolved. Rép. de Pharm., June, 1872.

Indium.—Dr. Richard Godeffroy finds that indium is most profitably prepared from Freiburg zinc, by dissolving it in hydrochloric acid, and heating the solution to the boiling-point with addition of *pure* zinc, by which a precipitate, composed of lead, cadmium, arsenic, iron, and all the indium contained in the zinc, is formed. The precipitate is dissolved in nitric acid; the greater part of the lead is precipitated by sulphuric acid, and the filtrate is treated with sulphhydric acid, is then again filtered and heated to drive off sulphhydric acid. The heating is continued, with the addition of nitric acid to oxidize protoxide of iron to peroxide, and is then precipitated with ammonia. The precipitate now contains iron, indium, and traces of zinc, is carefully washed, dissolved in acetic acid, and, after filtering, again treated with sulphhydric acid, by which sulphide of indium, containing traces of iron and zinc is precipitated. This is now dissolved in hydrochloric acid, heated to drive off sulphhydric acid, allowed to cool, and treated with excess of carbonate of barium, shaking frequently, by which oxide of indium is precipitated, and is then collected, together with the excess of carbonate of barium, upon a filter, and washed. It is then dissolved in dilute sulphuric acid, filtered to remove sulphate of barium, and precipitated by ammonia. Finally, the oxide of indium, so obtained, is, after

careful washing and drying, heated to redness in a current of hydrogen, by which it is reduced to the metallic state.

Thus obtained, indium is a silver-white, glistening, extremely soft and ductile, non-crystalline metal, and does not lose its lustre by exposure to air or water. The author prepared and describes many of the compounds of indium, of which the following is a condensed description. The formulas given by the author are based upon the new system of chemical notation ($O = 16$).

Suboxide of Indium = InO.—Obtained by the reduction of In_2O_3 in a current of hydrogen at a temperature of about 300° C. (= 572° F.). A light, black, pyrophorous powder; oxidized by nitric acid into In_2O_3. If the reduction is conducted below 300° C. (= 572° F.), variable mixtures of InO and In_2O_3 are formed, which, according to circumstances, may be blue or green.

Oxide of Indium = In_2O_3.—Obtained by heating its carbonate or nitrate to redness; also by heating metallic In to redness for some time, by which InO is first formed, which, as the temperature increases, ignites and forms In_2O_3. A light yellow powder, infusible, non-volatile; dissolved by dilute acids with difficulty in the cold; readily by heat.

Hydrated Oxide of Indium = $In_2O_6H_6$.—Obtained by precipitating its salts. White, gelatinous when moist; white, horn-like mass when dried.

Sulphide of Indium = In_2S_3.—Obtained by the direct union of sulphur and indium; also by heating In_2O_3 and S, by which sulphurous acid is eliminated. A brown, infusible powder, not decomposed by heat. Salts of the oxide give with sulphide of ammonium a white precipitate, soluble in excess by the aid of heat, and again deposited on cooling.

Chloride of Indium = In_2Cl_6.—Obtained by heating indium, mixed with carbon, in a current of chlorine, by which a white vapor of chloride is formed, which condenses upon the sides of the vessel in form of handsome, glistening, crystalline scales. Anhydrous; decomposed by sodium with explosive

violence; exceedingly hygroscopic, and soluble in water with a hissing noise and strong elimination of heat. Upon a water-bath it may be evaporated without decomposition, but at a higher temperature oxychloride, nearly insoluble in water, is formed. It forms double salts with the chlorides of potassium, ammonium, and lithium.

Iodide of Indium $= In_2I_6$.—Obtained by heating metallic indium with excess of I, in an atmosphere of dry carbonic acid, and distilling off excess of I. Yellow, exceedingly hygroscopic, crystalline mass; easily browned while melting.

Bromide of Indium $= In_2Br_6$.—Obtained in same manner as chloride of indium. A white, crystalline, volatile substance.

Cyanide of Indium and Potassium exists only in form of solution, as by its evaporation hydrated oxide of indium is deposited. Obtained by treating a solution of an indium salt (?), with cyanide of potassium.

Sulphate of Indium $= (SO_4)_3In_2$.—Obtained by dissolving the metal in dilute sulphuric acid, evaporating to dryness, and heating sufficiently to drive off excess of acid. Its neutral solution yields, upon evaporation, a white, gumlike mass, containing 9 mol. of water. By strong heating it is converted into a basic salt.

Chromate of Indium.—Obtained by solution of the hydrated oxide in aqueous solution of chromic acid. The neutral salt is insoluble; the acid salt remains, upon evaporation, in the form of an uncrystallizable, syrupy mass.

Formate of Indium is obtained by dividing the hydrated oxide in formic acid. Small, very soluble, crystals are obtained.

Acetate of Indium $= (C_2H_3O_2)_6In_2$.—Obtained by dissolving hydrated oxide of indium, freshly precipitated from cold solution, in glacial acetic acid, and evaporating the solution to crystallization. Forms tufts of silky, glistening needles, which are readily decomposed, and, consequently, are not of constant composition.

Tartrate of Indium is best obtained by dissolving the hydrated oxide in boiling solution of tartaric acid until a considerable precipitate forms (?). It yields, upon filtering, and evaporating, in vacuo, a gelatinous uncrystallizable mass.

The author also defines the behavior of indium and its salts to reagents, and gives methods of their qualitative and quantitative determination. Zeitschr. d. Œst. Apoth. Ver., 1873, No. 8.

TUNGSTEN.

Phosphotungstic Acid, which was discovered by Scheibler, forms either splendid, strongly refractory, regular octahedrons, which are exceedingly lustrous, very readily soluble, and rapidly efflorescent, or it forms crystals of a cubic form, the formation of one or the other being dependent upon the method of their preparation. Both forms of the acid possess the property, like phosphomolybdic acid, to precipitate organic bases from their acidulated solution, even when such solution is very dilute, forming very voluminous precipitates, which subsequently become denser, and may be readily filtered off and washed. Pharm. Cent. Hall., 1873, No. 13. (Communicated by Schering.)

TELLURIUM.

Tellurium.—V. Schrötter having, in a paper upon the isolation of tellurium from the telluride of Nagyàg, recommended the use of sulphate of iron for the separation of the gold contained in it, subsequently recommends the use of lead-foil as more profitable, the lead-foil being simply immersed in the boiling, properly diluted, liquid, acidified slightly with muriatic acid. The separation of the gold is complete, and as there is lead originally present in the liquid, the additional introduction is no hindrance to the further manipulation. Min. Akad. Ber., 1872, 20.

BISMUTH.

Bismuth.—Mr. Edward Smith finds that among the impurities found in metallic bismuth—As, Sb, Cu, and occasion-

ally Pb—the copper is the most difficult to remove, and he has adopted the process of Tamm for its estimation. This consists in simply fusing coppery bismuth with sulphocyanide of potassium. The sulphocyanide, used by Tamm, is produced during the fusion of the metal, 1 part of a mixture of 8 parts of cyanide of potassium and 3 parts of flowers of sulphur being thrown over 16 parts of the metal, melted at a low temperature, which is then heated to a bright red-heat—such as is readily obtained by a Bunsen burner. The author has, by comparative experiments, satisfied himself that the process is perfectly reliable. He finds, however, that there is considerable loss of metal (Bi), amounting in one experiment to 8.6 per cent.; but subsequent experiments warrant him in saying that the loss should not exceed 5 per cent. The proportion of sulphocyanide used should also be higher than given by Tamm, whose estimate was made for *pure* sulphocyanide. Fifty parts of impure metal require from 3.5 to 4 parts of cyanide with 1 part of sulphur. If a deficiency of cyanide is used, sulphide of bismuth is formed. Am. Journ. Pharm., 1872, p. 494.

Bismuth, for the supply of which we have heretofore been dependent entirely upon the mines of South Germany, has been discovered in abundant quantities in Utah Territory, about two hundred miles from Salt Lake City. It is to be hoped that this new source will afford a sufficient supply to greatly reduce its price. Amer. Drug Cir., Nov., 1872, p. 195.

Subnitrate of Bismuth.—Mr. Charles Ekin, who pointed out the presence of silver in commercial subnitrate of bismuth in 1868, has recently again subjected quite a number of samples to examination, and found many of them to contain appreciable quantities of silver, and also subchloride of bismuth, three of the samples as high as 3.9, 4.9, and 6.5 per cent. of the latter. Ph. Jour. and Trans., Nov. 1872, 381.

It subsequently occurred to the author to ascertain if the liquor bismuthi of commerce also contained silver, and of twelve samples examined two were found to contain a large

amount of silver, one an appreciable trace, and the other nine were free from it. Ph. Journ. and Trans., Dec. 1872, 501.

ARSENIC.

Arsenic.—Prof. J. W. Mallet has succeeded in fusing metallic arsenic by a process identical with that of Landolt, but with which he claims that he was not at the time acquainted. Arsenic, in coarse powder, is placed in a thick barometer-tube, which is well sealed at both ends, and inclosed in a piece of wrought-iron gas-tubing, closed at each end with a screw cap, the space between the two tubes being well filled with sand, and the whole heated to redness by a charcoal fire. Arsenic thus treated was found to be fused into a perfectly compact crystalline mass, moulded to the shape of the tube, of steel-gray color, brilliant lustre, and of sp. gr. = 5.709 at 19° C. (= 66.2 F.). It possesses more cohesive power than ordinary sublimed arsenic, and when crushed with a hammer seems to exhibit faint traces of flattening. The fusing-point lies between that of antimony and silver. Before the discovery of Landolt in 1859, it was generally assumed that arsenic could not be fused, but passed directly from the solid to the vaporous state, and that any attempt to secure increased pressure, by using a sealed tube, would result in the bursting of the tube. Chem. News, Aug. 30, 1872; Am. Journ. Pharm., 1872, p. 497.

The following modification of Fleetman's test, which enables arsenic to be distinguished in the presence of antimony, is suggested by Mr. J. W. Gatehouse: Place the solution in a long test-tube, and drop in a small piece of caustic soda about the size of a pea, also a piece of aluminium about a quarter of an inch in length by one-eighth of an inch in breadth, and cover the tube with a piece of filtering-paper which has been moistened with solution of nitrate of silver. If the soda has not already commenced to act with some degree of energy upon the aluminium, warm gently, and set aside for a short time. The spot of nitrate of silver will be blackened if As is present, but not if Sb alone is present. If some quantity of

As is present, the whole solution becomes of a dark-brown color, leaving a stain upon the tube; but with Sb a few black flakes, settling into a heavy black precipitate, are observed, leaving the solution colorless. 0.0075 grain AsO_3 dissolved in NaOHO, and diluted with water to 250 grains, produced perfectly the characteristic reaction upon the nitrate of silver paper, the solution, however, remaining colorless. Chem. News, 1873, p. 189.

A simplification of Hager's method for detecting arsenic has been devised by Bettendorff, which seems to be peculiarly applicable for testing pharmaceutical preparations for slight impurities of this element. The author's process is illustrated in the following method of testing commercial sulphuric acid for traces of arsenic: A small quantity of protochloride of tin, in a shallow dish, is covered with pure hydrochloric acid (1.12 sp. gr.); when it is dissolved the sulphuric acid to be tested is added, drop by drop, the vessel being agitated after each addition. This addition causes considerable heating, and if no arsenic is present the liquid remains clear. But if the smallest quantity of arsenic is present the liquid is colored, first yellow, then brown, and finally dark grayish-brown, becoming at the same time turbid. The process, while far more readily carried out than Marsh's, is declared to be equal in delicacy. Am. Journ. Pharm., 1872, p. 321, from Journ. of Frank. Inst.

Arsenic has been observed in *coal-soot* by H. Reinsch, who found it to contain also iron, manganium, and copper. 272 grammes of soot, strongly compressed, evolved upon incineration, first, the odor of bitter almonds, then of arsenic, afterwards of sulphurous acid, and left 166 grammes of red-brown ashes, in which traces of arsenic were still observed. Am. Journ. Pharm., 1872, p. 450, from N. Jahrb. f. Ph., 1872.

Arsenious Acid.—According to the experiments of Dr. L. A. Buchner, 1 part of crystallized (translucent) arsenious acid requires 355 parts of water at a temperature of 15° C. (= 59° F.), while 1 part of amorphous (porcelain-like) arsenious acid requires but 108 parts of water for complete solution. When the

two varieties of acid are boiled with water, and the solutions are exposed for twenty-four hours to a temperature of 15° C. (= 59° F.), 1 part of the crystallized acid will be retained by about 46 parts of water, while of the amorphous variety 1 part is retained by about 30 parts of water. N. Rep. f. Pharm., 1873, No. 5, p. 265.

ANTIMONY.

Sulphuret of Antimony.—Mirus has found a lot of sulphuret of antimony, designated "stibium sulpur. Germanic. crud." to contain 30 per cent. of quartz sand and other insoluble substances. Another lot designated "stibium sulfur. Hungaric. opt.," contained 15 per cent. of insoluble residue. By the aid of a lens, the author was enabled to recognize a considerable amount of quartz fragments, and regular quartz prisms. Pharm. Centralhalle, 1872, No. 31.

Antimonic Blue.—This new, beautiful pigment, which, however, cannot be used upon lime, is easily prepared by dissolving metallic antimony in aqua regia, filtering through glass, and adding a dilute solution of ferrocyanide of potassium as long as a precipitate is produced. It resembles ultramarine, and yields, with chrome yellow, or chromate of zinc, a green color, scarcely less bright than Paris green, but much less poisonous. It may be used with oil, varnish, gum, glue, and starch. Am. Journ. Pharm., 1872, p. 301; from Chem. Centr. Bl.

Arseniate of Antimony is prepared by Hager by first obtaining oxide of antimony from the chloride by precipitating with dilute solution of carbonate of soda, washing with a warm solution of the same salt, then with distilled water, and drying. Ten grammes of the oxide is dissolved, with moderate boiling, in four times the quantity of muriatic acid of 25 per cent. After cooling, small fragments of carbonate of sodium are added until a faint turbidity becomes permanent. Twelve grammes of anhydrous neutral arseniate of sodium is dissolved in 120 grammes of distilled water, into which solution the antimony solution is gradually dropped with continued

stirring. The liquid is then diluted with more distilled water and the precipitate washed by decantation, and upon the filter, until the filtrate ceases to occasion turbidity with nitrate of silver. It is then dried at a temperature of about 50° to 60° C. (= 122° to 140° F.), and constitutes a white, not very heavy powder. Its composition is SbO_3, AsO_5, and it contains 56 per cent. oxide of antimony, and 44 per cent. arsenic acid. If the solution of the chloride is added too rapidly, or if the precipitate is washed with hot water, the preparation contains an excess of antimony. Am. Journ. Pharm., 1872, p. 301; from Pharm. Centralhalle.

MERCURY.

Mercury, reaction of its vapor with Sulphur and Iodine.—Prof. G. G. Stokes, of Cambridge, drawing the attention of R. Von Schrötter to the observation made toward the close of the last century by a Dutch scientist, "that sulphur exercised a remarkable preservative influence upon plants exposed to the vapor of mercury," suggests that, perhaps, the judicious use of sulphur among the workmen of quicksilver works, such as those of Idria, might, in a measure, shield them from the injurious influence of mercury vapor. Experimenting with the solution of this problem in view, Von Schrötter finds that when sulphur is introduced into the vacuum of a barometer, the sides of the tube, at the end of the mercury column, became, after several days, coated with black sulphide of mercury, while higher up there is a coating of cinnabar, which is, however, not formed in the absence of light. The same results have been observed in a tube filled with air. Subsequently the author experimented with iodine vapor upon mercury and sulphur, and he finds that when the three elements are exposed in separate capsules, under a bell-jar, the sulphur is darkened, and upon the mercury biniodide is deposited. If, however, in order to cause slower vaporization, the iodine is employed in form of solution with iodide of potassium, the sulphur remains unchanged, while the mercury, after a very few minutes, becomes darkened, and gradually red; the iodine solution losing finally all the free iodine contained in it. The fact that when

sulphur and mercury alone are placed under the bell-jar, the sulphur becomes rapidly browned, and finally nearly black, warrants the author to the conclusion that when iodine is also present, it seizes upon all the mercurial vapor, and deposits upon the mercury in the form of biniodide; iodine vapor alone can be diffused throughout the bell-jar. Wien. Akad. Ber., 1872, No. 18.

When metallic mercury is shaken at common temperatures with solution of permanganate of potassium, it is, according to W. Kirchman, oxidized with formation of protoxide; when treated hot in the same way, binoxide is formed. Arch. f. Pharm., 1872; Nov. 1872, p. 203.

Oxide of Mercury and Iodide of Potassium.—Dr. Carl Jehn observed that an ointment prepared from lard, water, iodide of potassium, and red oxide of mercury, remained colorless. Experiments made with a view of discovering the cause proved that mercuric oxide is completely soluble in iodide of potassium, forming iodohydrargyrate of potassium and caustic potassa. Am. Journ. Pharm., 1872, p. 487; from Arch. der Pharm., 1872.

Calomel.—In mixtures of calomel with white sugar, magnesia, or sugar of milk, no signs of corrosive sublimate can be found, even after three months. Traces of sublimate do appear in a mixture of calomel, bicarbonate of soda, and sugar of milk, kept an equal time. Decided quantities were present in a mixture of calomel, bicarb. soda, and cane sugar, preserved the same period, and exposed to moisture. Half-yearly Compendium, from Allgem. Med. Centralzeit.; Pharm. and Chem. Rec., Jan. 1873, No. 17.

Protiodide of Mercury is obtained perfectly pure by Jules Lefort by double decomposition between iodide of potassium and the new double salt composed of *pyrophosphate of sodium* and *mercurous acetate.* The double salt is prepared by dissolving 60 grammes pure crystallized pyrophosphate of sodium in 300 grammes of distilled water by the aid of gentle heat, allowing the solution to cool, and dissolving in the

solution 30 grammes mercurous acetate, which is readily accomplished. The filtered solution is diluted with an equal volume of distilled water, and decomposed with a solution of 30 grammes iodide of potassium in 1 litre of water, adding the latter solution in small quantities and with continual agitation. The resulting precipitate, which has a greenish-yellow color, is perfectly pure protiodide of mercury, and requires only to be washed with water. Should the mercurous acetate have been contaminated with mercuric acetate, biniodide of mercury will be thrown down towards the last, which is evidenced by a pale red coloration of the liquid. Further addition being under these circumstances discontinued, the biniodide is readily removed by washing the precipitate with a little iodide of potassium. Journ. de Pharm. et de Chim., April, 1873, p. 267; Am. Journ. Pharm., May, 1873, p. 218.

Green Iodide of Mercury.—Mr. F. R. Williams has, during an experience of many years, found that the poisonous red iodide, formed along with the green iodide, cannot be completely removed by washing with alcohol, and has found a hot solution of chloride of sodium to answer the purpose most efficiently. The substitution is not only economical, but also expeditious and convenient. Pharm. and Chem. Rec., May, 1873, p. 140.

Red Iodide of Mercury.—To obviate the use of so large an amount of water, that is necessary when the ordinary process of its production is resorted to, Mr. F. R. Williams resorts to the aid of chloride of ammonium to dissolve the corrosive sublimate, which occasions no appreciable loss of red iodide of mercury, as it is but sparingly soluble in strong solution of chloride of ammonium. Pints of water thus accomplish what formerly gallons only could effect. The following is the author's method: 4 parts of corrosive sublimate are coarsely powdered in a wedgewood mortar, 2 parts of coarsely powdered chloride of ammonium are added, and the mixture is dissolved in 3 or 4 parts of water; 5 parts of iodide of potassium are dissolved in 5 or 6 parts of water, the solution is

mixed with the first solution, the precipitate is collected upon a strong filter, is thoroughly washed with water, and dried in the open air. Pharm. and Chem. Rec., May, 1873, p. 141.

Æthiops Mineral.—H. H. Croft draws attention to the use of Æthiops mineral in the treatment of cholera, M. Socrati Cadet, of the Royal University of Rome, having found its employment attended with decided success. From the statistics given, it appears that in the cases treated with the sulphide, in doses amounting to 72 grains per diem, the cures were from 60 to 100 per cent., while without its use the cures were from 25 to 40 per cent. Can. Pharm. Journ., May, 1873, p. 343.

SILVER.

Silver.—Gräger's method of the purification of silver from copper depends upon the fact, that when a solution of the nitrate of the two metals is boiled with carbonate of calcium, the copper is first, and the silver subsequently precipitated. The contaminated silver is dissolved in nitric acid, transferred to a flask, heated gently, and neutralized with prepared chalk. It is then caused to boil, and while boiling, prepared chalk is added, until the liquid is colorless, and a drop of it brought in contact with a drop of solution of ferrocyanide of potassium upon filtering-paper, no longer produces the characteristic reaction of ferrocyanide of copper. The liquid is then allowed to rest, is decanted, the residue brought upon a filter, and thoroughly washed. The decanted liquid and washings are precipitated with carbonate of sodium, the precipitate which settles rapidly is well washed, dried, and heated to redness, until the mass on cooling assumes a gray-white color. It is then treated with dilute hydrochloric acid, to remove carbonate of calcium, and when well washed, constitutes exceedingly pure silver in a finely divided state. Zeitschr. d. Œst. Apoth..Ver., 1872, No. 21.

J. Krüger states that the common method of reducing old silver solutions, by the preliminary aid of hydrochloric acid,

is often imperfect, owing to the complex character of the silver solution. Without regard to the amount of silver in solution, the author adds a portion of phosphoric ether (phosphorated ether?) by which the silver is separated in form of an intensely black precipitate, leaving a yellow to brown supernatant liquid. More phosphoric ether must be added if the precipitate exhibits light particles, and until it is uniformly black. The precipitate is collected upon a filter, well washed, and boiled with solution of potassa, which leaves the silver in the metallic state, or the dried precipitate may be reduced by adding it gradually to melting potassa in a crucible. Pharm. Cent. Halle, 1873, No. 7, p. 50.

GOLD.

Protochloride of Gold.—In the fifth edition of Berzelius's Lehrbuch der Chemie, it is recommended that protochloride of gold be prepared by heating the terchloride to 180° to 200° C. (=356° to 392° F.), while in the later editions of Otto, Musprat, and others, a temperature of 150° C. (=302° F.) is recommended. Mr. George Leuchs, having frequently prepared the protochloride in quantities, gives testimony to the correctness of the older recommendation. When the terchloride is heated only to 150° C. (= 302° F.), chlorine is eliminated until all the terchloride is reduced to the metallic state, while when the heating is conducted at the higher temperature, protochloride is formed, which does not give off chlorine. When heating to the lower temperature protochloride is also formed, but at that temperature the terchloride present absorbs moisture from the atmosphere, by which the protochloride is reduced partly to metallic gold, and partly reconverted into terchloride, and this action going on continuously, finally reduces all the terchloride to the metallic state. At the higher temperature the terchloride no longer absorbs moisture, and the protochloride formed remains unchanged, if the manipulation is correct. Journ. f. Pract. Chem., 1872, No. 14 and 15, p. 156.

PALLADIUM AND PLATINUM.

Chloride of Palladium is, according to Professor Böttger, reduced by the action of formate of sodium, slowly at ordinary temperatures, but at 50° C. (=122° F.), the separation of palladium black is rapid.

Chloride of Platinum, under the same conditions, is not reduced, even when heated to 100° C. (=212° F.). Apoth. Zeit., 1873, No. 3.

IV. ORGANIC CHEMISTRY.

HYDROCARBONS.

Toluol.—Dr. Senhofer, by acting upon toluol by sulphuric acid and anhydrous phosphoric acid under increased pressure, has produced a new *toluol-disulphuric acid*, which he describes along with several of its salts. When this new acid is melted with hydrate of potassium, it yields *isorcin*, a body isomeric with orcin and very similar to it, but differing in many of its reactions. By melting the potassium salt of this disulphuric acid with formate of sodium, *isoxylidinic acid*, similar to and isomeric with xylidinic acid, is produced. Wien. Akad. Ber., 1872, No. 18.

Cymen.—Barrier has obtained it from oil of turpentine by treating, at 50° C. (= 122° F.), 1 equivalent of hydrated oil of turpentine, $C_{20}H_{16}4HO$, with 2 equivalents of bromine, when a thick liquid of the consistence of glycerin is obtained, containing two bromated compounds, as yet little known. On distilling, a large quantity of hydrobromic acid is disengaged; the distilled liquid is boiled for two hours over fragments of potassa, and then subjected to fractional distillation; the liquid boiling between 176° and 179° C. (= 348.8° to 354.2° F.), presents all the characteristics of cymen. It is colorless, limpid, of a penetrating lemon odor, a specific gravity of 0.864, and the composition $C_{20}H_{14}$. Am. Journ. Pharm., 1872, p. 452, from Journ. de Pharm. et de Chim., 1872.

Paraffin.—According to G. Glässner, the use of paraffin for cementing stoppers to bottles containing alkaline solutions, is objectionable, as the paraffin swells by coming in contact with the alkaline solution, becomes frothy, and is apt to contaminate the contents of the bottle, rendering them turbid. This is of special import in connection with Fehling's or Schiff's test solutions for glucose. Zeitschr. d. Œst. Apoth. Ver., 1872, No. 26.

Ceresin.—A new substitute for white wax is, according to J. P. Remington, produced from *ozokerite*, or fossil wax, found in Galicia, by distilling off the liquid products at a temperature of 250° to 300° C. (= 497° to 592° F.), treating the residue with Nordhausen sulphuric acid, and then refining by a simple process. It is used principally in the manufacture of candles as a substitute for paraffin, than which it possesses greater opacity, while differing also in its behavior to solvents and in being less unctuous to the touch. Like paraffin it is soluble in chloroform, but is deposited in flocculent form from warm solution, while paraffin is deposited unchanged. Resembling white wax very closely it may possibly be used as an adulterant for it at an early day. Am. Journ. Pharm., 1872, p. 565.

Ceresin has been introduced into the Vienna markets partly in leaves, several lines in thickness, and partly in small blocks, weighing ½ to 1 pound. It has the consistence of wax, is perfectly odorless and colorless, translucent at the edges, melts at 61.5° C. (= 143° F.), specific gravity near 0.880, and seems to be a good substitute for wax. Ointments, made by Von Samphir, keep their consistence remarkably well, are of good color, do not become soft at a summer temperature, and in fact seem to answer the required purpose perfectly. (See Cerates and Ointments, in this report.) Zeitschr. d. Œst. Apoth. Ver., 1872, No. 24.

Petroleum, when exposed to the influence of direct sunlight, absorbs oxygen from the atmosphere like oil of turpentine and other oils, and converts oxygen into ozone. The ozone does not combine with the components of the petroleum, but remains free, and may react very energetically when brought

in contact with certain substances. Petroleum containing ozone burns with difficulty, has an entirely changed odor, and acts upon the corks used upon the vessels containing it. Colorless glass vessels promote the absorption to a larger extent than do those that are colored. Pharm. Centralhalle, 1873, No. 7, p. 51.

The northern coast of Peru has important deposits of mineral oil, but the workings have not yet acquired the importance which seems destined for them. It is found in other places, and varies greatly in depth, sometimes being found near the surface, while at others it is necessary to dig for some five hundred feet. The mineral oils obtained on the coast of Tumpez differ greatly from those found in Pennsylvania. They yield by distillation more than 60 per cent. kerosene, and about 25 per cent. of heavier oil for machinery, the residual 15 per cent. being principally tar, the proportion of oil of naphtha being unimportant. Am. Drug. Circ., May, 1873, p. 99.

VOLATILE OILS AND STEAROPTENS.

Volatile Oils.—The detection of oil of turpentine in other volatile oils by means of alcohol has heretofore been an unsolved problem; the solution of which, however, seems by the experiments of Dragendorff to be not very distant. The author, considering this method of detecting oil of turpentine feasible, first suggested by Zeller twenty-two years ago, ascertained accurately the volume of alcohol of various strengths necessary to form a clear solution with a given volume of the volatile oil. The difference in the volume of alcohol of different strengths, required for the complete solution of a given measure of a volatile oil, being constant for the same oil, any adulteration by oil of turpentine, it is believed by the author, may be readily detected if the adulterant is present to the amount of 10 per cent. or more. The author found that to effect a clear solution 1 cubic centimetre of oil of turpentine (a perfectly clear, fresh oil) required of:

Alcohol of 96 per cent. Tralles,			0.35 cubic centimetres.	
"	95	" "	0.75	"
"	94	" "	1.25	"
"	93	" "	2.25	"
"	92	" "	3.75	"
"	91	" "	4.30	"
"	90	" "	5.10	"
"	89	" "	6.00	"
"	88	" "	6.85	"
"	87	" "	7.85	"
"	86	" "	8.925	"
"	85	" "	9.90	"
"	84	" "	15.00	"

In conducting the experiment, the author allows the alcohol to flow from a burette into the accurate measure of oil, contained in a small glass-stoppered vial, in such manner that it will not come in contact with the sides of the vial before touching the oil; such contact causing a difference of 0.5 to 1.0 cubic centimetres. The alcohol is allowed to flow in until the mixture, upon agitation, becomes perfectly clear. In this manner the volume of alcohol of different strengths required to dissolve 1 cubic centimetre of the following oils was ascertained: several additional samples of oil of turpentine from various sources, oil of hemlock, of juniper (berries and wood), savin, copaiva, eucalyptus, lemon, sweet and bitter orange, bergamot, caraway, peppermint, balm, mint, lavender, rosemary, marjoram, cajeput, sage, cloves, cinnamon, and cassia. The results obtained justify him in the opinion above expressed. Many of the oils were prepared in the author's laboratory, by which the accuracy of the observations was assured, and he expresses the hope that his investigations may give the incentive to further experiments, and to the final solution of the hitherto difficult problem. N. Rep. f. Pharm., 1873, No. 1, p. 1.

Regarding the solubility of essential oils in alcohol, Gault makes the following observations:

1. Essential oils, containing carbon and hydrogen only, are but sparingly soluble in alcohol of 80 per cent. if 5 parts of alcohol is added to 1 part of oil.

2. Essential oils that contain, besides carbon and hydrogen, also oxygen, dissolve with more or less facility in such alcohol when the same proportions are used.

3. When essential oils containing only C and H are mixed with such containing also O, in the proportion even of 1 to 10, a globular sediment remains after the addition of alcohol.

4. The strength of alcohol necessary for the solution of essential oils seems to be proportional to the amount of oxygen they contain, and differs therefore in one and the same oil according to its age and exposure to air and light. Journ. de Pharm. et de Chim., Oct. 1872.

Professor Böttger proposes a method of detecting the adulteration of volatile oils with alcohol, which depends on the ready miscibility of the latter with, and the insolubility of essential oils in, anhydrous glycerin. The operation is simple, a small test-tube being accurately divided into cubic centimetres of capacity, equal measures of chemically pure glycerin and the essential oil introduced, and after agitation, allowed to rest, when the alcohol, having united with the glycerin, is readily read off. N. Rep. Pharm., 1872, No. 9, p. 566.

Estimation of Fats in Volatile Oils.—Ferdinand Rhien objects to the methods of evaporating from bibulous paper, and of treating with alcohol, specific gravity 0.823, as liable to yield incorrect results in examining volatile oils for adulterations with fats. He proposes to boil water in a half litre flask, and conducting the steam to the bottom of a smaller flask containing about 100 c.c. of water, and a measured sample of the volatile oil. The second flask is connected with a Liebig's condenser, and the distillate collected in a graduated tube. The distillation is continued until the oily layer in the tube ceases to increase in volume, which gives directly the true amount of volatile oil in the sample. The contents of the smaller flask may then be agitated with ether, and after evaporating the same in a beaker glass, the nature and quantity of the adulteration may be ascertained. For high-priced oils 1 c.c. is quite sufficient for the experiment; of cheaper

oils 10 c.c. to 15 c.c. may be taken. The operation is usually finished in from ten to fifteen minutes. Am. Journ. Pharm., 1872, p. 490, from N. Rep. f. Pharm., 1872.

H. R. Schramm proposes the detection of *oil of copaiva*, in oil of neroli and other essential oils which are adulterated with it, by mixing the oil with alcohol, saturating cotton or wick with the mixture, and burning. After the combustion of the spirit, the odor of copaiva becomes evident during the glowing of the wick. Fixed oils may be detected in the same manner. Zeitschr. f. Anal. Chem., 1872, p. 233.

Turpentin-Phosphorous Acid, which according to Koehler and Schimpf is produced when common oil of turpentine is administered as an antidote to poisoning by phosphorus (see Phosphorus, in this report), is obtained when common oil of turpentine is heated to 104° F., and phosphorus, to the amount of one-fiftieth of the weight of the oil, is gradually introduced, and is agitated immediately after it has melted. Upon cooling, the excess of phosphorus is deposited along with the substance in question, which resembles spermaceti in appearance, and may be separated from the phosphorus by alcohol. The (turpentine ?) mother liquor upon spontaneous evaporation yields more of the substance, and finally congeals entirely, when crystals may be removed by expression. Turpentin-phosphorous acid is a white crystalline substance possessing acid reaction, is very prone to change when exposed to air, and thereby converted into a resinous mass, in which phosphoric acid may be detected. It is decomposed above 122° F. in air, and at 104° F. in an atmosphere of hydrogen, is soluble in alcohol, ether, benzole, benzin, and alkalies, and forms insoluble compounds with the earths and metals. Pharm. Centralhalle, 1872, No. 30.

Oil of Bitter Almonds.—The presence of nitro-benzole in oil of bitter almonds, is detected by Bourgoin, by shaking the oil in a test-tube, with one-half its weight of solid caustic potassa. The yellow color of the oil is not changed if it is pure, but if nitro-benzole is present the color will soon change to a characteristic red. If a considerable quantity of nitro-

benzole is present, the red color is changed to a more or less fine green color, which on the following day again becomes red. The quantity of nitro-benzole is determined by agitating the adulterated oil violently and repeatedly, with four volumes of a concentrated solution of bisulphite of sodium. After some time rectified ether is added, which dissolves the nitro-benzole, and by evaporation permits its estimation. To prove the residue of the evaporation to be nitro-benzole, he converts it into anilin. Journ. de Pharm. et de Chim., July, 1872.

Camphor.—For the quantitative determination of camphor in complex mixtures, Hager proposes the following method: The alcoholic solution, containing, besides camphor, also volatile oil, extractive, &c., &c., is subjected to distillation; the distillate, containing the greater part of the camphor, is diluted with an equal volume of water, then shaken with $\frac{1}{10}$th volume of bisulphide of carbon, and allowed to separate. The supernatant liquid is returned to residue in the still, and subjected to distillation in a glycerin bath—towards the end at a temperature of 110° C. (= 230° F.). The second distillate is again shaken with the bisulphide of carbon, further diluted with water, separated from the bisulphide, and shaken twice more with bisulphide of carbon. The solutions in bisulphide of carbon are mixed, and exposed at a temperature of about 15° C. (= 59° F.), to spontaneous evaporation. A reduction of the temperature to 5° to 10° C. (= 41° to 50° F.), results in the evaporating vessel, at which temperature the camphor is volatilized to but an insignificant extent, while volatile oil, if present in small quantity, is carried off with the bisulphide of carbon. If large quantities of volatile oil are present, the residue must be again moistened with bisulphide of carbon, and allowed to evaporate; and this it may become necessary to repeat several times. Pharm. Centralhalle, 1872, No. 50, p. 449.

Monobromated Camphor.—Prof. J. M. Maisch, while preparing monobromated camphor in sealed tubes, by the method of Th. Schwartz, observed that the mixture of bromine and

camphor, after slight heating, developed considerable heat spontaneously, and that a considerable quantity of hydrobromic acid was formed. This suggested the idea that the monobromated camphor might be prepared without the use of a sealed tube, a supposition which subsequent experiments confirmed. W. H. Perkin had previously (1865) obtained monobromated camphor by treating the oily matter, obtained by the reaction between bromine and camphor, with hot solution of potassa, heating the product in a retort, and collecting that portion which passed above 364° C. (= 508° F.) separately. These results were, however, not brought to the notice of Prof. Maisch until subsequent to his researches, of which the following are the main points:

1. The formation of *bibromide of camphor* takes place at ordinary, or slightly elevated, temperatures by the combination of bromine with camphor, and is facilitated by the presence of a trace of alcohol. 2. The formation of the substitution compound—*monobromated camphor*—occurs when the heat is increased to 100° C. (= 212° F.), and is effected more rapidly at a temperature of 132° C. (= 269.6° F.); the sealed tube being substituted by a retort, so arranged that the products volatilized may be condensed and flow back. 3. The oily residue remaining after the separation of the monobromated camphor, may be for the greatest part converted into monobromated camphor by heating to 260° C. (= 500 F.). These three operations constitute the process of its manufacture. The yield is probably larger than by Perkin's process, and is more practical than that of Schwartz, as all danger by the bursting of apparatus is avoided, and, although a longer time for finishing the process is required, the different reactions do not require much supervision, except in the careful attention to the temperatures.

Monobromated camphor, as obtained by the author, forms thin, white, or colorless prisms when crystallized from alcohol; when crystallized from petroleum benzin, which is preferable, it forms long, flat prisms, perfectly transparent and hard; when rapidly crystallized from concentrated solution, it assumes the appearance of shining scales. It is insoluble

in water; readily and freely soluble in alcohol and ether, and in less than its weight of hot petroleum benzin, from which the greater part crystallizes upon cooling. It is permanent in air; not affected by direct sunlight; is slowly volatilized when boiled in water; possesses an odor reminding of Borneo camphor, and a taste which is terebinthinate and scarcely bitter. It fuses at 67° C. (= 170° F.), and boils at 274° C. (= 525° F.), with partial decomposition. When boiled with solution of nitrate of silver in nitric acid, it is decomposed, with formation of bromide of silver. Its composition, = $C_{20}H_{15}BrO_2$. From 13 ounces of camphor, and 12 ounces of bromine, the author obtained about 12 ounces of monobromated camphor, which, however, required to be recrystallized to become sufficiently pure. Amer. Journ. Pharm, 1872, p. 337.

ALCOHOLS AND ETHERS.

Alcohol.—A new reagent for alcohol is found by Berthelot in chlorbenzoyl. In contact with cold, or even lukewarm water, it is decomposed very slowly indeed, but if the water contains alcohol, benzoic ether is formed. This is taken up by the excess of chlorbenzoyl, and is rendered apparent when a little solution of potassa is added, which instantaneously dissolves the chlorbenzoyl, while it does not act immediately upon the ether. The reaction is distinct if 1 per cent. of alcohol is present, when 20 to 25 c.c. are used for the test, and even when only $\frac{1}{10}$th of 1 per cent. of alcohol is present, and but a few c.c. are used, the peculiar odor of the ether is perfectly distinct. The advantage claimed for the process is in this, that it can be conducted in a short time, and without resorting to distillation. N. Rep. f. Ph., 1872, No. 9, p. 567.

Absolute Alcohol.—Mendelejeff, having found caustic lime to be the most practical substance for the preparation of absolute alcohol, recommends that alcohol of specific gravity 0.792 be distilled with caustic lime, after standing two days, the lime being in such quantity as to extend above the liquid. Erlemeyer has modified this process by allowing the alcohol to boil, immediately after pouring over the lime, for $\frac{1}{2}$ to 1

hour with cohobation, then reversing the condenser, and distilling off the alcohol. In this manner he has obtained the entire distillate free from water. If the alcohol contains more than 5 per cent. of water, it is only necessary to repeat the operation several times. If it contains much water, it is best not to allow the lime to extend above the surface during the first boiling, otherwise the expansion of the lime may cause the fracture of the retort. N. Rep. f. Ph., 1872, No. 11–12, p. 737.

Alcohol from Lichens.—The production of alcohol from lichens assumes gradually, in Northern Finland, the character of a regular industrial pursuit. The quality of the spirit gives eminent satisfaction, and its manufacture from the above source, first practiced in Sweden, deserves to be encouraged as the cereals will thereby find more legitimate use in countries where they are often quite scarce. Arch. f. Pharm., Nov. 1872, p. 243.

Ether.—The presence of *water* in ether is detected by Prof. R. Böttger by agitating the ether with an equal volume of bisulphide of carbon, which yields a clear mixture if the ether is anhydrous, while a minute quantity of water renders it turbid. The presence of *alcohol* is detected by means of hydrate of potassium. A small piece immersed in ether is coated, in twenty-four hours, with a yellowish film, and the liquid acquires a yellowish color if alcohol is present. Am. Journ. Pharm., 1872, p. 539; N. Jahrb. f. Ph., Sept. 1872, p. 154.

The percentage of alcohol in ethylic (and acetic) ether is, according to C. Frederking, readily ascertained by adopting Böttger's method of detecting alcohol in essential oils. (See Volatile Oils, in this report.) The use of glycerin to remove the alcohol, as also water, before the final rectification of ether, is also recommended by the author; the glycerin being recovered for a subsequent operation by distilling off the alcohol. N. Rep. f. Pharm., 1872, No. 9, p. 566.

Adolf Lieben has made a series of experiments in order to determine the changes that ether will undergo by keeping in

the pure state, and when in contact with various substances. The preparation of perfectly pure ether for this purpose is exceedingly difficult. The author has, however, succeeded in preparing an ether for the purpose of his experiments which, when kept in well-stoppered vials, gave no evidence of change when kept for one year and a quarter. Such ether, when heated for a short time with water in a sealed tube to 100° C. (=212° F.), gave a distinct reaction of alcohol by the iodoform test, evidencing a conversion of a portion of the ether into alcohol. This conversion results likewise at ordinary temperatures, but extremely slow; not before three or four months' exposure. When exposed for six months to contact with *sodium*, no iodoform reaction was obtained; with recently fused *chloride of calcium* a distinct iodoform reaction resulted, as was also the observation with recently melted *chloride of sodium* and anhydrous *sulphate of copper;* while with *caustic potassa*, *lime*, and *carbonate of potassa* no change occurred. Ann. Chem. Pharm., 165, 134.

The observation of Ferrien, that ethylic ether has the property of decomposing iodides, is not confirmed by De Vrij, who finds that, while impure ether has that property, pure ether is utterly devoid of it. Recent experiments of Magnes-Lahens substantiate the latter authority, as will be evidenced in the following:

1. Pure sulphuric ether does not decompose iodide of potassium.

2. Sulphuric ether, when exposed to diffused light, becomes rapidly impure, and acquires acid reaction, and in this condition it decomposes iodide of potassium.

3. The acid produced by the action of diffused light is acetic acid.

4. White, starched paper, impregnated with solution of iodide of potassium, is a very sensitive test for the presence of acetic acid in ethylic ether. Journ. de Pharm. et de Chim., Feb. 1873.

Chloride of Mercuric Ethyl, which was first prepared by Strecker and Frankland from the iodide, is prepared, accord-

ing to Prümers, by adding corrosive sublimate to mercuric ethyl, washing the crystalline precipitate upon a filter with warm water, and drying over sulphuric acid. It forms white, glistening scales, is little soluble in water, ether, or cold alcohol, but dissolves freely in hot alcohol. At 40° C. (= 104° F.), it sublimes without fusing previously; its odor is peculiar, not disagreeable. Am. Journ. Pharm., 1872, p. 301; from Pharm. Centralhalle.

E. Schering offers the following information in regard to this compound, which has, of late, been introduced into medicine as a substitute for corrosive sublimate, on account of its property of *not precipitating albumen* in any of its forms, while its medicinal value is precisely the same as that of corrosive sublimate; the compound forms white, glistening, scaly crystals, which, when pressed, acquire a metallic lustre. It possesses a peculiar ethereal odor, is sparingly soluble in water, cold alcohol, and cold ether; but freely dissolved by hot alcohol, from which it crystallizes on cooling. It is volatile at ordinary temperature, and when heated upon platinum burns with a feeble flame, producing unpleasantly smelling vapor. As it is extremely poisonous, and at the same time volatile, it must be handled with great care. N. Rep. f. Pharm., No. 5, 1873, p. 309.

Sulphovinic Acid and Sulphovinates.—The studies of M. Berthelot, upon sulphovinic acid and its salts, lead him to the following conclusions:

When alcohol and sulphuric acid are mixed in such manner that all heating is avoided and the mixture is retained at 32° Fahr., no reaction takes place at first, but by continued contact a peculiar sulphovinic acid is formed, whose salts differ from the ordinary sulphovinates, but are converted into the latter by ebullition.

By mixing concentrated sulphuric acid and absolute alcohol in equal volumes, great heat is developed and sulphovinic acid is formed; but the quantity varies according to the manner of mixing.

When 1 part by weight of concentrated sulphuric acid and

5 parts of alcohol are mixed without precaution, 10 per cent. of the acid is changed into sulphovinic acid in the course of an hour, and 26 per cent. in twenty-four hours. If on the other hand 1 part of sulphuric acid is cautiously mixed with 2 parts of alcohol, hardly any sulphovinic acid is formed, and amounts to only a few per cent. after twenty-four hours.

Concentrated acid and absolute alcohol, at ordinary temperature, and used in equivalent proportion, (?) furnished him

After 40 hours,	56 per cent.
" 90 "	59 per cent
" 147 days,	58.8 per cent. of sulphovinic acid.

The reaction is singularly accelerated by heating the mixture to 212° Fahr., but when continued too long a loss is occasioned, owing to the gradual formation of ether at the expense of the sulphovinic acid.

The formation of sulphovinic acid is limited because of the presence of water, which was found to decompose pure sulphovinic acid. Alcohol containing 25 per cent. of water furnished after one month only 8 per cent. of the acid; on the other hand, when water is added to sulphovinic acid or to a sulphovinate, decomposition takes place, slow at ordinary temperature, but rapid at 212° Fahr., and alcohol and sulphuric acid are reproduced.

The decomposition of solutions of sulphovinates is much slower than that of the acid; the solution permitting evaporation to crystallization without decomposition. The solution will, however, not keep very long without decomposition, which once commenced, becomes more rapid owing to the continual liberation of sulphovinic acid by the sulphuric acid set free, the sulphovinic acid being more readily decomposed than its neutral salts. For this reason also, it is advisable to keep the solution of a sulphovinate alkaline with a carbonate or bicarbonate during its evaporation, decomposition always occurring to a greater or less extent during evaporation.

Even the sulphovinates in their crystallized state are liable to decomposition after more or less time. The change commences with the efflorescence of a portion of the crystals, which then become acid, and in a short time decompose the

entire mass. As long as the crystals preserve their solid state, they are stable; but the smallest trace of water of crystallization liberated by efflorescence attacks the crystals, sulphuric acid is set free, and successive decomposition takes place throughout the entire mass of crystals. Journ. de Pharm. et de Chim., April, 1873.

Sulphovinate of Sodium is prepared by P. Limosin as follows: 1 kilogramme of pure sulphuric acid of specific gravity 1.715, and 1 kilogramme of alcohol of 96° are allowed to flow by separate funnels by a third funnel into a bottle, kept cool by a refrigerating mixture, or by allowing water to flow upon it; the flow of the reacting liquids being so regulated that the alcohol remains in excess. The mixture is allowed to stand three to four days at a temperature of 20° to 25° C. (= 68° to 77° F.), is then diluted with 5 to 6 litres of distilled water, and saturated with about 100 grammes of carbonate of barium. The solution of sulphovinate of barium is filtered, decomposed with a solution of 50 to 60 grammes of pure carbonate of sodium in 4 litres of water, and when completely precipitated, it is filtered, evaporated upon a waterbath to specific gravity 1.33, and set aside to crystallize. The product is 1 kilogramme of pure sulphovinate of sodium, which, when well dried and crystallized, is not changed by air, becoming neither moist nor efflorescent. Its solution may be kept without decomposition for at least twelve months, but is decomposed when heated to 120° C. (= 248° F.) (?). The salt so prepared is readily soluble in water, dilute alcohol, and glycerin, sparingly soluble in absolute alcohol, insoluble in ether at 18° C. (= 64.4° F.); water dissolves nearly its own weight. Its solution is feebly bitter with sweetish aftertaste. The adult dose is 20 to 25 grammes. Pharm. Cent. Halle, 1872, No. 48, p. 433.

Sulphovinate of Soda.—Mr. Charles Rice, in a paper published in the American Journal of Pharmacy, February, 1873, p. 60, suggests a process in which the sulphovinic acid formed is converted into lime-salt by carbonate of lime, and the lime-salt is decomposed by carbonate of soda or

better, oxalate of soda; the latter salt removing the lime-salt most effectually. The author obtained it in a white, granular form of a faint ethereal odor, and cooling, somewhat aromatic, taste; it is very deliquescent, and soluble in 0.7 part of water at 60° F.

Chloroform.—A. C. Oudemans, Jr., has observed that cinchonia is less soluble in pure chloroform than when it contains a little alcohol, and that the more alcohol it contains, the more cinchonia is dissolved, and upon this observation he bases a method for the quantitative estimation of alcohol in it, the following table giving the result of his experiments:

One hundred parts (by weight) of chloroform at 17° C. (= 62 6° F.).

Containing	0	per ct.	by weight	of alcohol,	dissolved	0.28	per ct.	cinchonia.
"	1	"	"	"	"	0.90	"	"
"	2	"	"	"	"	1 46	"	"
"	3	"	"	"	"	1.99	"	"
"	4	"	"	"	"	2.49	"	"
"	5	"	"	"	"	2.96	"	"
"	6	"	"	"	"	3 39	"	"
"	7	"	"	"	"	3.79	"	"
"	8	"	"	"	"	4 15	"	"
"	9	"	"	"	"	4.48	"	"
"	10	"	"	"	"	4.76	"	"

The test is conducted by shaking 10 to 15 grammes of chloroform with an excess of cinchonia, allowing it to remain in water at 17° C. (= 62.6° F.) for one hour, with frequent shaking, filtering the liquid in a funnel carefully covered with glass, and then measuring 5 c.c., weighing this carefully in a capsule, evaporating, and determining the weight of the residue. The cinchonia is prepared from a weak alcoholic solution of a pure salt, by precipitation with ammonia and drying. Zeitschr. d. Œst. Apoth. Ver., 1873, No. 6.

The general acceptance that chloroform results, by the treatment of *pure methylic alcohol* with chlorinated lime, is contradicted by the experiments of A. Belohonbek, who finds that such conversion results only when commercial wood-naphtha is used, owing to the impurities contained in it, while pure methylic alcohol is incapable of such conversion. Wien. Akad. Ber., 1872, 20.

E. B. Shuttleworth recommends that chloroform that has been injured by age, be shaken with a little dilute solution of hyposulphite of sodium, decanting the chloroform, washing several times with pure water, and after separating, passing through a filter. The chloroform will at least serve the purpose for external uses. Can. Pharm. Journ., May, 1873, p. 345.

The assertion of E. Schering, in 1871, that the so-called "English chloroform," remarkable for its purity, is prepared from chloral-hydrate, is contradicted by an English manufacturing firm, in the daily papers, according to the same authority. Schering qualifies his former assertion by stating, that while *pure* chloral-hydrate is not used for the purpose, it is indirectly prepared from chloral-hydrate by the process pursued, which consists in saturating methylic (methylated ?) alcohol with chlorine, and treating the product with milk of lime. N. Rep. f. Pharm., 1872, No. 6, 371.

Cyanoform.—F. Pfannkuch finds that when iodoform is caused to react with cyanide of mercury, in the presence of alcohol, at a temperature of 120° C. (=248° F.) for a considerable time, complete double decomposition results, and a double compound of biniodide of mercury and cyanoform is produced. Upon the addition of water this compound is decomposed, the biniodide being precipitated. The purification of the cyanoform is however extremely difficult, on account of the tenacity with which iodine remains associated with it. The author has however succeeded in obtaining a small quantity in a perfectly pure condition, and finds it freely soluble in chloroform. When rapidly evaporated from its solution in chloroform, it remains in the form of a compact, amorphous, yellowish-white mass, but when slowly evaporated, forms crystalline needles. It is sparingly soluble in ether, and possesses a characteristic odor. Pharm. Cent. Halle, 1873, No. 4, p. 26.

Sulphoform is produced by analogous treatment. If chloroform is added to alcoholic solution of sulphide of potassium, reaction, often with explosive violence, takes place, and a

double compound is produced, which Pfannkuch regards a double salt of sulphide of potassium and sulphoform. The author hopes to publish further experiments with this compound shortly. Ibid.

Chloral.—Julian Grabowski finds that chemists have heretofore entirely overlooked the fact that chloral forms a compound with sulphuric acid with great readiness, it having been assumed that chloral is simply changed by sulphuric acid, in the cold, into the insoluble modification of chloral, and by the aid of heat into chloralid. When the process of Kekulé for the preparation of chloralid, which consists in mixing fuming sulphuric acid and chloral, is followed, the mixture soon congeals to a crystalline mass, in which neither insoluble chloral or chloralid is contained, and which is composed of a compound of sulphuric acid and chloral. This compound is not affected by cold water, but is readily decomposed by hot water. It is dissolved by alcohol, but at the same time decomposed, with formation of alcohol. Ether dissolves it very readily, and from its solution in ether it crystallizes unchanged. When the fumes of fuming sulphuric acid are passed into chloral a compound of the acid with chloral is likewise formed, but it differs from the compound obtained as above, as it is not decomposed by alcohol, and may be crystallized unchanged from its alcoholic solution. Apoth. Zeit., 1873, No. 14, from Ber. d. d. Ch. Gesel., 5.

Chloral Hydrate.—Bernbeck has found all the chloral hydrate examined by him, among which samples from Lampe, Kauffmann & Co., Berlin; Brückner, Lampe & Co., Leipzig; Schatz & Co., Gottingen; Herman & Windecker, Berlin; Merck, Darmstadt; &c., to possess an acid reaction, and that it contained formic acid. He purifies it by neutralization with carbonate of sodium and recrystallization from bisulphide of carbon. Pharm. Zeit., 1873, No. 15.

Referring to the above, Dr. O. Liebreich, under whose superintendence the chloral hydrate of Brückner, Lampe & Co. is manufactured, states that he examined every lot leaving his establishment, and guarantees its neutrality as issued by him.

He draws attention to the spontaneous decomposition which it is subject to, according to his observation, when it is exposed to light, moisture, or heat; and that the exclusion of these will prevent its decomposition. Ibid., No. 19.

Chloral Hydrate is, according to Byasson, decomposed by glycerin, at an elevated temperature, into chloroform and formic acid. When glycerin and chloral hydrate are subjected to distillation, chloroform, formic acid, formate of allyl-ether, and traces of muriatic acid are formed. Apoth. Zeit., 1873, No. 6.

E. Schering draws attention to the conservative effect of chloral hydrate upon substances that are liable to undergo putrefaction. An instance is recorded in England, in which the body of a person who had died from excessive use of chloral hydrate, withstood putrefactive decomposition for a long time. The antiseptic effect of the chloral is supposed to be owing to the neutralization of the alkalinity produced during putrefaction, and that the chloroform liberated excludes atmospheric oxygen and destroys the vibriones. According to Dr. Jacobsen, when ½ per cent. of chloral hydrate is dissolved in water, and in this solution dried albumen is dissolved, the solution will resist putrefaction for a long time. N. Rep. Journ. Pharm., 1872, No. 6, p. 371.

Experiments made by Oré lead him to the opinion that the experiments of O. Liebreich, with reference to the value of strychnia as an antidote to chloral, are by no means conclusive. Ber. d. d. Chem. Ges., 1872, No. 12.

Kühn recommends the use of chloral hydrate in combination with morphia in the treatment of mania and delirium tremens, and states that the dangerous symptoms occasionally observed when large doses of chloral hydrate are administered never occur when this combination is employed. The author recommends the following proportion: 3.0 chloral hydrate to 0.01 to 0.02 morphia. Pharm. Centralhalle, 1872, No. 27.

Mr. J. G. Plumer suggests the employment of a concen-

trated solution of hydrate of chloral for convenience in dispensing; such solution being made by dissolving 1 ounce chloral hydrate in sufficient distilled water (about 5 drachms) to make a fluid ounce. The author finds syrupus flor. aurant., P. B., the best addition to chloral, and proposes the following formula for a syrup: Liq. chloral. hydrat. (prepared as above), 80 minims; syrup. flor. aurant. and syrup. simplic., each 4 drachms; such a syrup containing 10 grains of chloral hydrate to the drachm. If desired colored, the author suggests the addition of ½ ounce syrupus rhœados or 2 minims tr. cocci to the above quantity of syrup. Ph. Journ. and Trans., Dec. 1872, p. 443.

Chloral Sulphhydrate.—When dry sulphhydric acid is passed through anhydrous chloral at the ordinary temperature, the gas is absorbed and considerable heat is produced. The product is a solid white substance, which is purified by crystallization from ether or absolute alcohol, and is called by Byasson chloral sulphhydrate. It possesses a very disagreeable odor and a characteristic taste, reminding of chloral hydrate, from which it differs in containing 2 equivalents of sulphhydric acid in lieu of 2 equivalents of water; is soluble in alcohol, ether, and chloroform; melts at 172° F., and is slowly decomposed by water, sulphur is deposited, sulphhydric acid liberated, and the water contains chloral hydrate and hydrochloric acid. Journ. de Pharm. et de Chim., July, 1872.

It boils at 253° F. By alkalies it is split into chloroform and formate and sulphide of the alkalies. Nitric acid oxidizes it, forming trichloracetic and sulphuric acids. Comp.: C_2HCl_3O,H_2S ($O=16$). Ber. d. d. Chem. Gesel., 1872, No. 10.

Croton Chloral Hydrate forms, according to the latest communication of E. Schering, small, white, shiny, tabular crystals, of a peculiar odor and burning taste. Comp.: $C_4H_3Cl_3O + HO$; of difficult solubility in cold water; readily in hot water, in alcohol, and in ether. When heated it melts, volatilizes, and produces irritating vapors. By concentrated SO_3 it is deprived of its water of hydration, the croton chloral floating on the surface as an oily liquid, which by warming

is entirely destroyed, with blackening and development of HCl. Characteristics of its purity are, that it melts at 78° C. (=172.4° F.); that it is completely dissipated by heating; that it forms clear solutions with water and with alcohol; and that its aqueous solution must be neutral in its reaction. Pharm. and Chem. Rec., Jan. 1873, p. 20; from Neu. Repert. f. Ph., 1872.

Iodal (*Tri-iodaldehyde*), discovered by Aimé several decades ago, is proposed by Guyot as an anæsthetic, in doses of 1.0 to 2.5 grammes. It is formed when a solution of 1 part of iodine in 4 parts absolute alcohol is mixed with concentrated nitric acid, separating upon standing in the form of a heavy brown oil, which is purified by shaking with water and distilling from carbonate of potassium and chloride of calcium. It is a liquid, resembling chloral in consistence and odor, boils at 25° C. (=77° F.), and is decomposed by caustic potassa into iodoform and formic acid. Pharm. Centralhalle, 1873, No. 5, p. 33.

Bromal Hydrate, according to Berti and Namias, possesses no advantage over similar medicinal agents, and is even inferior in some respects. Even in small doses and suitably diluted, this substance produces burning in the throat, pyrosis, vomiting, and diarrhœa. It is best taken in an emulsion. Am. Journ. Med. Sci., Jan. 1873, p. 243.

Amylic Alcohol is detected in ethylic alcohol by Bouvier by a new method, which consists in shaking a small fragment of iodide of potassium with the suspected alcohol in a long tube, when, if it contains ½ to 1 per cent. of fusel oil, a distinct yellow coloration is produced, perceptible when ⅛th per cent. is present. Böttger, who finds this method reliable, states that the coloration is not produced by the fusel oil, but by an acid accompanying it. Pure amylic alcohol does not decompose iodide of potassium, even at a boiling temperature. Zeitschr. f. Anal. Chem., 1872, p. 343.

Propargylalcohol.—L. Henry, who previously had indicated the existence of this alcohol, has now succeeded in isolating

it in a pure state, and determined its composition. It is formed by the action of potassa upon monobromated allylalcohol in the presence of water. Monobromated allylalcohol, to which a little water has been added, dissolves caustic potassa with facility, forming a bright, faint yellow solution. This is heated upon a sand bath in a flask connected with an inverted condenser. Energetic action occurs, the liquid begins to boil, becomes quite brown, and bromide of potassium is deposited. When reaction ceases, the excess of potassa is saturated with carbonic acid, and, after the addition of a little water, the liquid is subjected to distillation. Upon the addition of carbonate of potassium to the distillate, the propargylalcohol separates in the form of an oily liquid. The yield is not very large, but the author believes to have observed that the small excess of potassa employed diminishes the quantity. The alcohol is dried by distilling from carb. potassa, or better, caustic potassa, and then constitutes a colorless, mobile liquid, of pleasant odor and excessively burning taste; is soluble in water, has a specific gravity of 0.9628 at 60° F., boils at 240° to 250° F., and is composed of C_3H_3HO. It is inflammable, burning with a very luminous, sooty flame. The author describes a compound produced with bromine, and the compounds produced by it when acted upon by ammoniacal solutions of copper and of silver. Ber. d. d. Chem. Ges., 1872, No. 12.

Carbolic Acid.—Salkowski suggests that Lex's test for ammonia, by means of carbolic acid, is as readily applied as a test for carbolic acid, when the manipulation is conducted with proper care. To the liquid to be tested one-fourth its volume of ammonia is added, this is followed by a few drops of filtered solution of chlorinated lime (1 part chlorinated lime to 20 parts water), and gentle heat is applied, not sufficient to boil. If considerable quantity of carbolic acid is present, the characteristic blue color is immediately produced; when in small quantity, the color appears on standing from a few minutes to a quarter of an hour. One part of carbolic acid in 4000 may be readily detected. The precautions necessary are not to heat too strongly and not to use too much chlorinated

lime solution, a very small quantity sufficing. Very dilute solutions are turned green instead of blue, but both colors are changed to red upon acidulating with sulphuric or muriatic acid. N. Jahrb. f. Pharm., Feb. 1873, p. 94; from Zeitschr. f. Anal. Ch., 1872.

A new test for the presence of carbolic acid is noted by Mr. Charles Rice (Am. Journ. Pharm., March, 1873, p. 98). Chlorate of potassa, in powder, is covered in a test-tube with muriatic acid, and after a reaction of about one minute the mixture is diluted with 1½ volumes of water. The gas being removed from the surface by blowing it out, ammonia is poured on so as to float upon the surface of the acid liquid, and after the clouds of chloride of ammonium have been removed by blowing, a few drops of the suspected liquid is allowed to flow down the side of the tube. If carbolic acid is present, the upper colorless layer of liquid will assume a color varying from the darkest brown through all the shades of red-brown, blood red, rose red, according to the quantity of carbolic acid present. One part in 12,000 may be distinguished.

Schædler recommends the qualitative estimation of compound carbolic acid by converting it into sulphocarbolic acid, as the most reliable. Two to three grammes of the acid is heated upon a water-bath to dissipate alcohol if present; an equal volume of sulphuric acid is then carefully added, and the mixture is allowed to stand at a temperature of 50° to 60° C. (=122° to 140° F.) for some time. The liquid is then diluted, treated with excess of carbonate of baryta (or litharge), and is filtered. The filtrate is precipitated with excess of dilute sulphuric acid, the sulphate of baryta (or lead) is well washed, dried, heated to redness, and weighed. The result gives the data necessary for the estimation of carbolic acid. Chem. Centr. Bl., 1872, No. 32.

Laudolt recommends the use of bromine-water for the detection of minute quantities of carbolic acid, in preference to perchloride of iron, which gives its peculiar color reaction only when more than 1 part of carbolic acid is present in 2100 parts of the liquid tested, while an immediate bulky pre-

cipitate of tribromophenol is produced by bromine-water in a solution containing but 1 part in 43,700. It is also recommended for the quantitative determination of carbolic acid. Am. Journ. Pharm., 1872, p. 321.

In the course of his investigations upon the value of carbolic acid as a disinfectant, P. C. Plugge also studied its power as a reducing agent, and discovered, incidentally, that nitrate of protoxide of mercury, containing traces of nitrous acid, served as a delicate test for its presence. When a solution of such a salt is boiled with a solution containing carbolic acid, a reduction of the mercurial salt occurs, and the liquid assumes, sooner or later, according to its dilution, an intense red color. The reaction is distinct in $\frac{1}{80000}$ dilution, and is manifest even when the dilution is $\frac{1}{200000}$. The quantity of nitrous acid must be very minute, however, else the color reaction becomes indistinct. N. Rep. f. Ph., 1872, No. 11–12, p. 739.

F. Salomon has found carbolic acid very serviceable for the isolation of narceina and curarina. (See Alkaloids, in this report.)

The liquefaction of carbolic acid, for convenience in dispensing, is accomplished by Otto Facilides, by adding to the pure crystallized acid 10 per cent. of pure glycerin, heating until the acid is melted, and mixing by agitation. Such a liquid will not again congeal at ordinary temperatures, and is regarded preferable to the acid liquefied by the addition of a small percentage of water, alcohol, or ether. Zeitschr. d. Œst. Apoth. Ver., 1872, No. 28.

According to Th. Husemann, saccharate of lime is the best antidote to poisoning by carbolic acid. (See Saccharate of Lime, in this report.)

Sulphocarbolates.—Mr. R. Rother reviews Laurent's experience with sulphocarbolic acid and some of its salts, and gives some experiences of his own in Pharm. and Chem. Rec., Nov. 1872, p. 241.

Carbolic Acid and Creasote.—Prof. Flückiger recommends the following plan to distinguish between carbolic acid and creasote, by which carbolic acid may also readily be discovered

when mixed with creasote: If 1 part of solution of perchloride of iron, of about 1.34 sp. gr., is mixed with 9 parts of creasote, no peculiar color results; if now 5 parts of alcohol, containing 85 per cent. absolute alcohol, is added, the solution becomes green, and if it is then diluted with 60 parts of water, a turbid, dingy, brownish mixture results, separating drops of creasote. If, on the other hand, the liquid under examination is carbolic acid, the mixture at first becomes yellowish, upon the addition of the alcohol clear brown, and finally, upon the addition of the water, a beautiful, permanent blue solution is formed, from which the carbolic acid may separate, but is redissolved by shaking. The author also draws attention to the fact that *Morson's test*, which depends upon the solubility of carbolic acid, and insolubility of creasote, in glycerin, must be made with glycerin containing a little water, as creasote is soluble in anhydrous, or nearly anhydrous glycerin. A clear solution of creasote in anhydrous glycerin becomes turbid upon the addition of a little water, while a similar solution of carbolic acid may be diluted with water, without causing separation of the acid. Am. Journ. Pharm., 1872, 465, from Ph. Journ. and Trans., 1872.

Creasote.—J. A. Clarke recommends, for the detection of carbolic acid in creasote, that a few drops of the suspected creasote be boiled with about 2 drachms of nitric acid until red fumes are no longer evolved. When the solution produced is neutralized with potassa, *no precipitate is formed if the creasote is free from carbolic acid.* If carbolic acid to the amount of 2 per cent. is present, being converted into *picric acid*, a yellow crystalline precipitate is produced. The creasote is, by the boiling with NO_5, converted into oxalic acid. Can. Pharm. Journ., May, 1873, 344.

Guaiacol.—The statement made recently, that creasote of commerce contained mainly guaiacol, a product of the destructive distillation of guaiacum, induced Mr. John Williams to prepare some of this substance, with a view to its comparison with ordinary commercial creasote. Powdered guaiacum was exposed in a shallow iron pan, to sufficient heat to cause

the commencement of charring, and until every trace of water was driven off, by which treatment frothing is avoided in the subsequent distillation. This is conducted in an iron retort, furnished with a long iron tube to serve as a condenser, the heat being gradually increased to low redness, and continued as long as tarry matter distils; a tarry product, amounting to two-thirds of the guaiacum employed, being obtained. The tarry matter is again distilled from the iron retort, and yields about one-third of its bulk of light-brown oily liquid, which is treated with solution of caustic soda. By this treatment, a part of the oil is dissolved, while a considerable quantity remaining undissolved is separated and rejected. The alkaline solution upon distillation, water being added from time to time to make up for that which distils, yields a quantity of very offensively smelling light oil, which is rejected also; and when no more oil is observed to pass over, the alkaline solution in the retort is diluted, a slight excess of sulphuric acid is added, and distillation is resumed. The product is again treated with caustic soda, again distilled, the light oily distillate rejected as before, and the alkaline residue exposed to the air for several days, by which it becomes blackened. It is then treated with sulphuric acid, and the heavy very dark purple oil is separated and purified by several distillations, forming finally a colorless, heavy, oily liquid, which is pure or nearly pure, guaiacol. While guaiacol, as thus prepared, is colorless, it soon assumes a pale straw color, possesses an odor like creasote, but less disagreeable than some commercial samples of the latter. It begins to boil at 200° C. (= 392° F.), soon rises to 210° C. (= 410° F.), at which point two-thirds distils over, the remainder coming over at 215° C. (= 419° F.). It is strongly refractive, has the taste and general physical properties of creasote, and is insoluble in pure glycerin, but soluble in glacial acetic acid.

Finding that English creasote corresponded with guaiacol in its insolubility in pure glycerin, while German creasote was soluble in pure glycerin, the author suspected that the latter contained carbolic acid, as a mixture of guaiacol with 50 per cent. of carbolic acid was also found soluble in glyc-

erin. The results of numerous experiments, however, failed to prove this, and he eventually arrives at the conclusion, that the English creasote is doubtless a product of wood-tar, but not a homogeneous body, consisting probably of several isomeric substances; that German beechwood tar yields a creasote, which is, to a certain extent, different from either pinewood-tar creasote or guaiacol, and that in some of its properties, German creasote approaches guaiacol much nearer than the English creasote, possessing an almost identical odor, and a much nearer and constant boiling-point.

Referring to the test, proposed by Professor Flückiger (see above), for distinguishing between creasote and carbolic acid, the author states that the brown color produced by the creasote entirely masks the blue coloration produced by carbolic acid, even when it is present to the amount of 50 per cent. or as much as 100 per cent. This is in complete contradiction to Professor Flückiger's distinct statement, that by the test proposed, the presence of carbolic acid may be detected in creasote. Am. Journ. Pharm., 1873, p. 503.

Glycerin.—Mr. Edward Smith states that English glycerin, as a rule, stands the Pharmacopœia tests of gravity, &c., well. Continental samples, although professedly "pure and equal to Price's," are not always reliable; either the gravity is low, or they are not odorless, or not perfectly free from metallic impurity. One specimen, apparently pure, was found to contain a notable amount of some sulphur compound, and when warmed gently with some dilute acid, gave off sufficient HS to react upon lead-paper, and to discolor metallic solutions; while a mixture composed of this glycerin, dilute acid, and water, became highly offensive within a couple of hours, when exposed at ordinary temperatures. Am. Journ. Pharm., 1872, p. 493.

Glycerin.—The following table of specific gravities of mixtures of glycerin and water is given by Schweikert in Zeitschr. Œst. Apoth. Ver., No. 13, 1873:

Specific gravity.	Water, per ct.	Specific gravity.	Water, per ct.	Specific gravity.	Water, per ct.
1.267	0	1.212	17	1.161	34
1.264	1	1.209	18	1 159	35
1.260	2	1.206	19	1.156	36
1.257	3	1.203	20	1.153	37
1.254	4	1.200	21	1.150	38
1.250	5	1.197	22	1.147	39
1 247	6	1.194	23	1.145	40
1.244	7	1.191	24	1.142	41
1 240	8	1.188	25	1.139	42
1.237	9	1.185	26	1.136	43
1 234	10	1.182	27	1.134	44
1.231	11	1.179	28	1.131	45
1.228	12	1.176	29	1.128	46
1.224	13	1.173	30	1.126	47
1 221	14	1.170	31	1.123	48
1.218	15	1.167	32	1.120	49
1.215	16	1.164	33	1.118	50

Am. Journ. Pharm., June, 1873, p. 264.

Glycerin.—The solvent power of glycerin upon anilin colors is about to be applied to dyeing, excellent results having been obtained on silk, woollen, and cotton fabrics; the color adheres with unusual persistence to the fibre of the goods, and is of increased brilliancy, especially with the iodine colors. The loss being considerable in the rinsing of the cloth, the question of cost is an item of consideration, but it is, in a measure, compensated by the material in the bath remaining fit for use to the last, while the loss, occurring in the use of alcohol by evaporation, is avoided.

The property of glycerin to preserve leather has been known for a long time; it is now proposed to employ it in tanning, to increase the elasticity and resistance of the leather. This system of tanning is particularly adapted to straps and belts of machinery, as it keeps them from drying and cracking. It is only necessary to immerse the leather, tanned in the usual manner, in a bath of glycerin, and to leave it for several weeks, when the pores will be impregnated with it,

and the leather will be found to be much more elastic and tenacious. Am. Journ. Pharm., 1872, p. 419, from Journ. of Appl. Chem., 1872.

FIXED OILS AND FATS.

Fixed Oils.—The circumstance that oleic and other acids, frequently contained in fixed oils in a free state, are soluble in alcohol, while the oils are relatively insoluble or but sparingly soluble, has suggested to Burstyn the application of alcohol for their determination in such admixture; and his experiments have resulted favorably. When olive oil is treated with an equal or double volume of 90 per cent. alcohol, by thoroughly agitating them together, and the mixture is then allowed to rest, the alcohol, containing the fatty acids, separates upon the surface and reacts acid, while the lower, oily stratum, is entirely void of acid reaction. By operating upon definite quantities, the acid may be determined quantitatively by the use of normal solution of soda; the neutralization-point being decided, and readily recognizable. Numerous experiments prove the availability of this method to the perfect satisfaction of the author. Zeitschr. f. Anal. Chem., 1872, p. 283.

Dr. Hermann Ludwig has compiled a paper in which the literature of the fixed oils is extracted, so as to exhibit their properties and reactions as completely as possible. The paper treats of their color, smell, and taste, their fluidity, specific gravity, congealing-point, relation to polarized light, elementary composition; and their solubility in alcohol; of the increase of temperature, and reaction produced by the addition of sulphuric acid; their reactions with other acids, with alkalies, and with oxidizing agents; and finally, their behavior when subjected to distillation. The compilation is very thorough, and will greatly aid experimenters and manufacturers. Arch. d. Ph., July, 1872, p. 7; N. Rep. f. Ph., 1872, No. 8, p. 463.

Rapeseed, Linseed, and Poppyseed Oils, are readily and perfectly bleached, according to C. Puscher, by mixing 100 parts of the respective oils with 2 parts of a mixture of equal parts of 96 per cent. alcohol and sulphuric acid. Instead of partial

resinification—the usual result when sulphuric acid alone is used—the sulphuric acid forms a uniform mixture with the oils; the mixture soon becomes turbid, blackens subsequently, and after standing at rest 24 to 48 hours, a small black deposit subsides, leaving the supernatant oil as colorless as water. Only linseed oil has a yellowish tinge in thick strata. To remove traces of sulphuric acid, the oils, after decantation from deposit, are shaken with a little water, and allowed to rest. Apoth. Zeit., 1872, No. 38.

Fatty Acids.—When neutral fats are saponified, a considerable excess of alkali above the theoretical quantity is required, unless the operation is conducted under great pressure, in which event the risk of explosion is great. When the fats are decomposed by sulphuric or other strong acid, aside from the risk of fire and explosion, much of the fat is charred and burnt, and the remainder is so black as to require distillation to fit it for manufacturing purposes. Mr. W. Lant Carpenter draws attention to a process, the invention of Prof. J. C. O. Bock, of Copenhagen, by which the operation is readily conducted in open tanks by ordinary steam heat, and the yield of fatty acids is not only greater, but they also possess a higher melting-point than when prepared by the older methods. Prof. Bock has shown that most fats are made up of minute globules of fat, surrounded by albuminous envelopes, which form from 1 to 1.5 per cent. of the weight of fat. This albuminous envelope, which, by the ordinary methods, required the use either of excess of alkali, pressure, or heat for their destruction and removal, are by the new process broken and partly destroyed by the action—for a limited time and at a given temperature—of a small quantity of sulphuric acid. The neutral fat then pours out from the envelope in a state ready for decomposition by water in open tanks, an operation requiring several hours for completion. The progress of the decomposition is judged of by microscopic examination of the crystals of fat, or fatty acid, formed by slow cooling in thin layers on a glass slip, and when completed, the glycerin solution is drawn from the fatty acids (amounting to 94 per cent.

of the original fat), which are at this stage of a brown or blackish color. The albuminous envelopes are then eliminated, and with them most of the coloring matter, by submitting the fatty acids, in open tanks, to the action of dilute solutions of certain oxidizing agents (sulphuric, nitric, and hydrochloric acids, permanganate and bichromate of potassium, and hypochlorite of calcium, were employed), by which the black matter, being partly oxidized, is rendered specifically heavier and readily subsides, leaving the fatty acids of comparatively good color. After washing them several times with water, they are treated in the usual manner by hot and cold pressure. Am. Journ. Pharm., 1872, p. 463, from Chem. News, Aug. 1872.

Oleic Acid.—Messrs. F. & H., of New Orleans, suggest the preparation of *pure* oleic acid by forming a potassa soap with oil of sweet almonds, decomposing this by tartaric acid, washing the precipitated fatty acids carefully to remove cream of tartar formed, forming a lead soap by boiling with litharge, mixing the lead soap with 3 volumes of ether, pouring off the clear ethereal solution, and washing residue with a fresh portion of ether. The ethereal solution is mixed, with brisk agitation, with excess of dilute hydrochloric acid, the ethereal solution of the liberated oleic acid is decanted, washed with water, and the ether distilled off. The product is oleic acid, with a certain quantity of *oxyoleic* acid, from which it is freed by converting it into an ammonia soap, decomposing this with chloride of barium, drying the precipitate formed (after washing?), and boiling it in alcohol, which upon cooling deposits pure oleate of baryta. This yields pure oleic acid, upon decomposition with solution of tartaric acid in *boiled* distilled water. Care must be taken, in washing the acid for the last time, to avoid contact with the atmosphere. Oleic acid so prepared is nearly colorless, and slightly thinner than oil of sweet almonds. It readily dissolves oxide of mercury and morphia, forming solutions varying in color from white to that of linseed oil. A temperature of 150° F. should not be exceeded when dissolving the oxide, and solution

should be effected in a close vessel. Amer. Journ. Pharm., March, 1873, p. 97.

Oleic Acid and Oleates.—Mr. Alfred W. Gerrard uses oleic acid—such as is furnished as a secondary product at the stearin candle factories—for the preparation of a number of oleates. This acid, by reason of its impurities, cannot be made to unite with the bases used in equivalent proportion, but will readily form 20 per cent. solutions, which the author considers of suitable strength. Such oleic acid is of the color of olive oil, somewhat thinner in consistence, of a slight tallowy odor, and is soluble in all the ordinary fats and oils, in alcohol and ether; but is insoluble in glycerin. To prepare

Oleate of Mercury, the author observes, it is not necessary to prepare freshly precipitated peroxide of mercury, finely levigated peroxide serving the purpose very well.

O'eate of Lead (20 per cent.) is prepared by heating one part of oxide of lead, and four parts of oleic acid, until solution is effected. On cooling, a semi-transparent, tenacious mass is formed, which is somewhat softer than lead plaster, and requires diluting with oils or fats when wanted for direct application.

Oleate of Zinc is prepared in the same manner and proportions from oxide of zinc, as is oleate of lead from oxide of lead. It is transparent when melted, has the appearance of lead plaster, is hard and friable, and requires to be diluted, for application, in the same manner as oleate of lead.

Oleate of Atropia is prepared by dissolving 2 grains of atropia in 98 grains of oleic acid, and

Oleate of Aconitia is prepared in the same manner and proportion.

Oleic acid, being readily obtained at cheap rates, there seems to be no objection to the introduction of oleates on economical grounds; the chief consideration being, whether they possess any advantage, as remedial agents, over those of the same kind already in use. Amer. Journ. Pharm., 1872, p. 461.

Oleic Acid and Oleate of Mercury.—H. Maclagan prepares oleic acid from oil of sweet almonds, which he considers sufficiently pure olein to be regarded as such for the purpose of preparing oleates. The oil is saponified with potash, the soap decomposed by hydrochloric acid, the mixture allowed to separate upon a separating funnel, the oleic acid removed, heated gently to separate remaining water, and after a short time carefully poured off. From 4 ounces of oil 3 ounces of oleic acid were obtained. The *oleate of mercury* was prepared from this by dissolving in it, with the aid of gentle heat, as much precipitated peroxide of mercury as the oleic acid will take up. Instead of preparing solutions containing severally 5, 10, and 20 per cent. of peroxide, the author favors the preparation of as strong a solution as possible, which may be diluted with olive or other oil to the required strength. The *precipitated peroxide of mercury* is prepared from a solution of pernitrate with potash. Can. Pharm. Journ., April, 1873, p. 305.

Oleate of Mercury.—Mr. Charles Rice has observed that nearly all the oleic acid of commerce—the residuary product of the stearin candle manufacture—has a tendency to reduce the oxide of mercury. Of 192 grains of oxide of mercury, heated with 1920 grains of oleic acid, there was reduced, at a temperature of 200° F., 35 grains; at 212° F., 69 grains; at 280° F., 152 grains; at 300° F., 175 grains. Between 180° and 200° F., the quantity varied between 20 and 40 grains. To prepare a 6 per cent. solution of oleate of mercury, he recommends that oleic acid of commerce be exposed to a temperature of 40° to 50° F., and the liquid portion expressed from the greater portion of the accompanying solid acids; 1536 grains of the oleic acid so prepared is then heated at a temperature not exceeding 200° F., with 192 grains of oxide of mercury—which has previously been triturated with a portion of the acid—until the undissolved residue is of a pure gray color. The mixture is allowed to stand twenty-four hours; the clear solution is poured into a tared capsule; the residue is washed with ether, and the washings are added to

the contents of the capsule, which are then gently heated to drive off the ether, and weighed. The residue of metallic mercury is subjected to further washing with ether, to remove all traces of oleic acid, and its weight being ascertained, data are furnished from which the amount of oleic acid necessary to convert the solution into 6 per cent. solution is obtained. From the oleate of mercury so obtained, the *oleate of mercury and morphia* may be made, by dissolving sufficient morphia in it to make it of the strength of 2 per cent. The author subsequently obtained a commercial sample of oleic acid, which dissolved completely, without reduction. It was also found that less heat was necessary to effect solution (160° or 180° F.). The product was of a light brownish-yellow color, and of the consistence of cream. Am. Journ. Ph., Jan. 1873, p. 1.

Oleate of Mercury.—Mr. Louis Dohme has operated by Mr. Charles Rice's process for oleate of mercury, and has found it difficult to obtain a satisfactory preparation. His experiments induced him to try its preparation by double decomposition between oleate of potassium and nitrate of mercury, and he found this method successful and practicable. 350 grains of red oxide of mercury is dissolved in 335 grains of nitric acid, 42°, and the solution is diluted with ½ fluid ounce of water; 220 grains of caustic potassa is dissolved in 4 ounces diluted alcohol, and the solution is mixed with 1112 grains oleic acid (commercial?). A clear solution of oleate of potassium is formed, into which the solution of nitrate of mercury is stirred briskly; the precipitated oleate of mercury is well washed with water, finally pressed with a pestle to remove water as much as possible, is placed into a tared dish, and brought with oleic acid to the weight of 7000 grains. It is heated to 140° F., and forms a clear solution containing 5 per cent. of red oxide of mercury. Am. Journ. Ph., April, 1873, p. 158.

LIGNIN, STARCHES, AND SUGARS.

Gun-cotton.—Prof. Boettger has found in a boiling concen-

trated solution of protoxide of tin and soda *a new solvent* for gun-cotton, a clear yellowish solution being formed, which may be diluted with a large quantity of water without becoming turbid. The solution is precipitated upon the addition of excess of HCl, forming a slimy, gelatinous mass, which is recognized as regenerated cellulose; it being in the same form as that obtained by precipitating an ammoniacal copper solution of cotton with HCl. Ordinary cotton being insoluble in soda-tin solution, this solvent serves as a test of the genuineness of the gun-cotton, and enables us to determine how much of the cotton has been converted into gun-cotton, as all unchanged cotton remains undissolved. Pharm. and Chem. Rec., March, 1873, p. 81.

A remarkable property of explosive gun-cotton is noted by Bleekrode. If it is saturated with bisulphide of carbon, or with ether, benzol, or absolute alcohol, the liquid will burn, while the explosive cotton will apparently melt away, appearing like slowly melting snow, and failing entirely to explode. According to this observation it would appear that the saturation of explosive cotton with the above-named liquids, furnishes an excellent means of preventing its explosion while storing it. N. Rep. f. Pharm., 1873, No. 3, p. 183.

Tunicin.—Berthelot so calls an animal cellulose which he obtained from mollusks of Tunis. Tunicin resists the action of acids much better than does cotton, and it is not carbonized by fluoride of boron. Journ. de Pharm. et de Chim., Oct. 1872.

Starch.—The bulbs of the Liliaceæ containing starch in abundance, endeavors have lately been made in France to utilize the starch of several varieties, among which the bulb of *Fritillaria imperialis* has been found exceedingly rich, containing on the average 23 per cent., while the bulbs weigh half a pound or more. A very white starch, composed of regular, egg-shaped granules, is obtained by a treatment identical with that for obtaining potato starch, and it is recommended as a dietetic article. For this purpose its peculiar taste and odor must be removed, however, by thorough wash-

ing, then soaking for twenty-four to forty-eight hours in water to which has been added some vinegar or soda, and then again washing thoroughly, and finally drying. Apoth. Zeit., 1873, No. 3.

Dextrin.—It has heretofore been a doubtful point whether or not dextrin is capable of undergoing the alcoholic fermentation with yeast alone. The experiments of C. Barfoed, made with a view to settling this question, lead him to the following results:

1. The freedom of dextrin from grape sugar may be determined by acetate of copper. 2. A solution of pure dextrin is capable of undergoing alcoholic fermentation with yeast alone. 3. The gaseous products consist solely of carbonic acid. 4. A conversion of dextrin into glucose during the fermentation could not be noticed, and the components of dextrin and of water must therefore be transposed simultaneously. Journ. Prakt. Ch., 1872, Nos. 17, 18, p. 334.

Glycogen.—Cl. Bernard opposes the theory of other physiologists that the glucose in blood is formed directly from albuminous substances, and contends that there exists in the animal economy, particularly in the liver, a substance analogous to amylum. This substance, which he calls glycogen, is transformed into glucose under the influence of a ferment, similar to diastase. It does not differ in its chemical constitution from vegetable starch; is colored by iodine, either in its granulated or dissolved condition, and this color disappears upon heating and reappears upon cooling, just as is the case with vegetable starch. The color is, however, different, glycogen producing a less blue, and more of a wine-red color. Journ. de Pharm. et de Chimie, December, 1872.

Animal Starch, which had been observed several years ago by C. Dareste in the yolk of egg, but the existence of which has since been doubted, has been the subject of further research by Dareste, who maintains the correctness of his observation, and finds that the detection of the starch-granules, which are very small, is rendered exceedingly difficult, owing to the albuminous, fatty, and other matters with which they

are associated. This detection by the microscope is rendered comparatively easy, however, if the egg is selected at a certain period during its hatching, that period being when the sac has completely separated from its contents. The author has discovered starch also in various organs of the chicken, and in the testes of various animals. Vierteljahrschr. für Pharm., April, 1873, p. 265.

Cane Sugar.—M. Scheibler finds the following to be the solubility of sugar (cane?) in dilute alcohol and in water:

In 100 parts of a mixture of 30 parts of alcohol and 70 parts of water at 0° C. (= 32° F.) 65.5 parts; at 14° C. (= 57.2° F.) 67.9 parts; at 40° C. (= 104° F.) 82.2 parts.

In 100 parts of a mixture of 50 parts of alcohol and 50 parts of water at 0° C. (= 32° F.) 45.9 parts; at 14° C. (= 57.2° F.) 47.1 parts; at 40° C. (= 104° F.) 68.4 parts.

In 100 parts of a mixture of 90 parts of alcohol and 10 parts of water at 0° C. (= 32° F.) 0.7 parts; at 14° C. (= 57.2° F.) 0.9 parts; at 40° C. (= 104° F.) 2.3 parts.

In absolute alcohol sugar is insoluble. Pharm. and Chem. Rec., Jan. 1873, p. 17, from Ber. d. d. Ch. Ges.

Crystallized sugar and nitrate of silver, when acting upon each other, do not, as stated by Maumené, yield optically neutral sugar, N. Borodylin having obtained instead invert sugar and oxalate and cyanide of silver. Amer. Journ. Phar., Jan. 1873, p. 14, from Pharm. Zeit. f. Russ.

According to Raoult cane sugar is, by the action of light, converted into glucose. Annal. Chim. et de Physique, 1872.

F. Weil proposes the following method for its quantitative determination by titration. The sugar—converted into grape sugar if cane sugar—is treated with titrated Fehling's solution in such excess, that the supernatant solution remains deep blue after the reaction is completed. Filtration is then resorted to; the precipitated suboxide is well washed, and the washings and filtrate are titrated back by a method of titration proposed by the author in Zeitschr. f. Anal. Chem., vol. 9, p. 297. The excess is thus ascertained, and by sub-

tracting that from the entire quantity used, accurate results are obtained with greater certainty than by the direct titration. Three hundred and seventeen grammes of metallic copper = 180 grammes of grape sugar or 171 grammes of cane sugar. Zeit. f. Anal. Chem., 1872, p. 284.

A source of error in the estimation of sugar with Fehling's solution has been pointed out by Dr. L. Brunner, who found that some kinds of filtering-paper are very appreciably dissolved by alkaline solutions of copper; he therefore recommends to ascertain this behavior of the copper solution for each lot of filtering-paper, or to convert the cuprous oxide obtained in the process into cupric oxide. Amer. Journ. Pharm., 1872, p. 354, from Zeit. f. Anal. Chem., 1872.

Saccharate of Lime.—The remarkable solvent effect of solution of saccharate of lime upon old gelatin which has become insoluble in water is noteworthy, as is also the character and quality of the liquid glue formed. (See Liquid Glue, in this report.) Amer. Journ. Pharm., 1872, p. 562.

Dr. Husemann recommends saccharate of lime as the best antidote to carbolic acid. His directions for preparing the antidote are as follows:

Dissolve 16 parts of sugar in 40 parts of water, add 5 parts of quicklime previously mixed to a smooth creamy consistence, digest for three days with frequent agitation, filter, and evaporate to dryness. The saccharate so prepared is freely soluble in water, and affords a strongly alkaline solution. Amer. Drug. Circ., March, 1873, p. 59.

Glucose.—According to Prof. H. Schwarz, chemically pure grape sugar is obtained by dissolving cane sugar in 80 per cent. alcohol to which a little muriatic acid has been added. On standing, chemically pure grape sugar is deposited. N. Jahrb. f. Pharm., Jan. 1873, p. 23, from Polyt. Notizbl.

Among the gaseous products of the decomposition of solution of grape sugar by an electric current, Mr. H. T. Brown finds, besides hydrogen and oxygen, also carbonic acid and carbonic oxide, and the solution contains aldehyde, acetic

acid, and small quantities of formic acid. These observations led the author to believe that during electrolysis alcohol is primarily formed. Ber. d. d. Ch. Ges., 1872, No. 10; Apoth. Zeit., 1872, No. 27.

A new reagent is recommended by Campani for the detection of glucose in diabetic urine, consisting of concentrated solution of subacetate of lead, with dilute solution of crystallized acetate of copper. The liquid under examination is added to about 5 cubic centimetres of such solution, and is heated to boiling. If glucose is present the liquid is turned yellow, and deposits, after a time, a yellow precipitate. The reagent is sensitive with one hundredth of 1 per cent. of glucose. In larger quantities, about 1 per cent. of glucose, the liquid and precipitate are orange-red. The reagent is indifferent to cane-sugar, but produces similar reaction with lactin. Zeit. f. Anal. Chem., 1872, p. 321.

Milk Sugar.—A. Laubenheimer has determined that by the action of permanganate of potassium in strong alkaline solution, and at a boiling temperature, milk sugar is completely decomposed, forming carbonic acid and water. E. Monier had contended that the permanganate has no influence upon lactin, and based, upon this view, a method of titration for the quantitative determination of casein in milk. G. Langbein, on the other hand, had found that lactin is, by the action of permanganate of potassium in acid solution, slowly but surely resolved into carbonic acid and water.

Laubenheimer has also experimented upon the action of permanganate of potassium, upon lactin in water at ordinary temperature, and found that under these circumstances oxalic acid and an amorphous acid is formed. The author has not succeeded in obtaining this of sufficient purity to determine its elementary composition, but he inclines to the belief that it is either gallactic or pectolactic acid, which had been obtained under similar conditions by Boedecker and Struckmann. The observation of H. Kammerer, who had found *isomalic acid* in a silver bath composed of nitrate of silver and lactin, but into which paper, saturated with citric and succinic acid, had

been introduced, induced him to search for isomalic or malic acid among the products of oxidation; neither of which were found, however. Zeitschr. d. Œst. Apoth. Ver., 1872, No. 35.

Ferrous Mannate is proposed by M. Ghysen, and is prepared as follows: Seventy-five grammes pure crystallized sulphate of iron is pulverized and mixed intimately with 100 grammes manna in tears. Eighty grammes of solution of ammonia (specific gravity 9.05) is then added, the mass is rubbed so as to become homogeneous, and mixed with 130 grammes alcohol (94°). From the soft mass separating the ammoniacal liquid is poured off, the residue is treated again with 130 grammes alcohol, and the product afterwards dried and pulverized. The liquid rejected amounted, in the author's experiment, to 310 grammes, and the product to 125 grammes of a beautiful green powder, which is entirely unalterable in air. The powder suspended in water colored it green, but did not dissolve in it, the filtrate being entirely colorless. It may be administered in the form of powder or pills. The latter are made by making a mass with 10 grammes ferrous mannate and 120 grammes of water, and dividing into pills of 20 centigrammes each. The mass is hard, but may be rolled and divided with facility, while the pills keep perfectly without coating. Pharm. Journ. and Trans., 1873, p. 764.

Sorbite (sorbin?) has been obtained by Boussingault from the berries of Sorbus aucuparia. It is crystallized and isomeric with mannite and dulcite, but differs from them in various ways. Journ. de Pharm. et de Chim., July, 1872.

ORGANIC ACIDS.

Acetic Acid.—Dr. L. A. Buchner, in his "Commentar zur Pharmacopœa Germanica, 1873," contends that there has been no improvement in the theory of the production of acetic acid from alcohol, as advanced originally by Döbereiner in 1831, and that the views lately advanced and supported by Pasteur, that to the conversion of alcohol into acetic acid the presence and formation of the peculiar fungus "Mycoderma

aceti" (mother of vinegar) is necessary, is not supported by facts, as Liebig, who had beechwood shavings examined in 1870, which had been in use uninterruptedly for twenty-five years, has abundantly proven. Such shavings did not show the slightest trace of Mycoderma aceti under the microscope, and simply showed evidence of decay in the brown color assumed, the structure remaining intact. N. Rep. f. Pharm., 1873, No. 3, p. 168.

The assertion of Hager, in the recent edition of his "Commentar zur Pharmacopœa Germanica," that acetic acid is not completely separated when equivalents of sulphuric acid and acetate of sodium are subjected to distillation, is completely refuted by the experiments of F. Mohr, who originally recommended the process in an older edition of his "Commentar." Hager states that one-half of the acetic acid only passes over at near the boiling-point, while the other half cannot be expelled until a temperature of 180° C. (= 356° F.) is reached, at which temperature the acetic acid is decomposed by the sulphuric acid, with reduction of the latter into sulphurous acid. In answer to this Mohr says that when equivalents of sulphuric acid and acetate of sodium are used, free sulphuric acid does not exist, and that acetic acid can be distilled from Glauber salt without decomposition. To prove that the process recommended by him is reliable, and that his views are correct, he subjected 120 grammes crystallized acetate of sodium and 45 grammes sulphuric acid—the proportion by him recommended—to distillation upon a sand-bath, and the distillation was pursued until drops no longer collected. The distillate weighed 101.013 grammes, and constituted 50.3 per cent. acid, = 50.729 grammes monohydrated acetic acid; this amount corresponding to 95.9 per cent. of the theoretical quantity. The loss—4.1 per cent.—was not retained in the retort, but constituted the unavoidable loss which occurs in all distillations. The distillate was entirely free from sulphurous acid or empyreumatic products. N. Rep. f. Ph., 1873, No. 1, p. 28.

Dr. Buchner, at the request of Dr. Mohr, repeated his ex-

periments with results that entirely confirm Dr. Mohr's view. In two distillations he obtained very nearly the calculated quantity of acetic acid (52.50 grammes). An examination of the distillate proved it to be entirely devoid of sulphurous acid or empyreumatic products. Furthermore, it was proven that when acetate of sodium, in fine powder, was decomposed by an equivalent of sulphuric acid, and was then heated gently in a beaker, with occasional stirring, until the residue was dry, the residue, washed with strong alcohol and heated to redness, was found to be entirely composed of sulphate of sodium, while the washings only contained traces of sulphate of sodium. N. Rep. f. Ph., 1873, No. 1, p. 32.

Notwithstanding Mohr's results to the contrary, O. Maschke recommends its preparation, in small quantities, by the use of 2 equivalents of sulphuric acid to 1 equivalent of acetate of sodium. The distillation takes place more readily and rapidly, while, by the use of 1 equivalent of sulphuric acid, rectification is generally necessary. The use of an excess of sulphuric acid is fully compensated by the rapidity of the operation, and the saving in fuel. Pharm. Zeit., 1873, No. 11.

G. Merck finds the test for empyreuma in acetic acid, which, according to the Pharmacopœa Germanica, consists in adding a few drops of solution of permanganate of potassium, is not reliable if the acid is not diluted with at least its own weight of water, as with strong acid the color will disappear rapidly, even when it is entirely pure, while, when diluted, the red color remains several hours, unless empyreuma is present. Vierteljahrschr. f. Pharm., April, 1873, p. 289.

Mr. Ed. Smith has found acetic acid to contain a small proportion of iron—2.67 grammes in an imperial pint. It also contained some manganese, which was not estimated, but was readily detected in the sulphide of iron thrown down by sulphide of ammonium from the neutralized acid. Am. Journ. Pharm., 1872, p. 493.

Acetate of Sodium has been found by Sacc to answer admirably for the preservation of eatables, and he laid before the Academie des Sciences samples of meat and vegetables so

preserved. The eatables so preserved are, when to be used, first treated with sal ammoniac, by which acetate of ammonium is formed, which is washed out, and chloride of sodium.

Acetate of Iron, in scales, may be obtained, if a solution of the salt is evaporated upon glass plates in a dark place, at a temperature of 15° to 17° C. (= 59° to 63° F.) It is of a deep chestnut-brown color, dissolves readily and clear in water, and must be kept in a dark place. Am. Journ. Pharm., 1872, p. 540; Pharm. Centralhalle, 1872, No. 42.

Trichloracetic Acid.—A. Clermont prepares this acid by the oxidation of chloral with permanganate of potassium, and has prepared a number of its salts in addition to those previously described by him.

Acid Trichloracetate of Ammonium is prepared from the neutral salt by the addition of 1 equivalent of trichloracetic acid, and forms handsome, transparent octahedrons.

Trichloracetate of Thallium is obtained in the form of brittle prismatic needles, when trichloracetic acid is saturated with carbonate of thallium, and the filtered solution is slowly evaporated. The *acid trichloracetate* is obtained in the form of transparent octahedral crystals. Ber. d. d. Chem. Ges., 1872, No. 12.

Propionic Acid.—August Freund has repeated the experiments of Lautemann, with a view to the determination of the yield of propionic acid from lactic acid, and the advantages of lactic acid as its source. The process pursued was to convert 60 grammes of iodine in 140 grammes of water into hydriodic acid, mixing this with 60 grammes of syrupy lactic acid, distilling off about 100 grammes of the liquid, and heating the residue in the retort for about 4 hours with reversed condenser. The contents of the retort become brown, and crystals of iodine condense in the condenser, these are washed back into the retort with the 100 grammes of distillate first obtained, sulphuric acid is passed into the liquid to reconvert the iodine into hydriodic acid, and, after separating the liquid from the sulphur, it is again distilled

until 100 grammes pass over, then again heated with reversed condenser, &c. By repeating this 7 or 8 times, the lactic acid is completely reduced, and the propionic acid formed is contained in the 100 grammes of distillate. The distillate is diluted with about 50 grammes of water, distilled as long as the distillate produces no precipitate of iodide of lead upon the addition of propionate of lead, and then constitutes a pure solution of propionic acid. From this the concentrated acid is obtained by saturation with carbonate of sodium, evaporation to dryness, melting, allowing to cool, powdering, and decomposing with dry hydrochloric acid gas, according to the method of Professor Linneman. The author obtained, on an average, 62 per cent. of propionic acid, 77 per cent. being the theoretical quantity obtainable from lactic acid. As the hydriodic is available again, the author considers lactic acid an excellent source for propionic acid, and is convinced that the manufacturer could readily simplify the method of its production. Journ. f. Pract. Chem., 1872, No. 10, p. 446.

Benzoic Acid.—By the action of melting potassa, benzoic acid yields, according to L. V. Barth, considerable quantities of *paraoxybenzoic acid*, small quantities of an acid intermediate between *paraoxybenzoic* and *protocatechuic acid*, and considerable quantities of amorphous products of condensation, which containing less oxygen than the benzoic proves that, along with oxidation, reduction takes place. Wien. Ak. Ber., No. 18, 1872.

Dioxybenzoic Acid.—L. V. Barth and C. Senhofer obtained, by the action of concentrated sulphuric acid and water upon dioxybenzoic acid, a new substance which they have named

Anthrachryson.—In its impure state it is green; when purified, forms golden yellow crystals, and is produced from 2 mol. of the acid, by the loss of water. Distilled from overpowdered zinc it yields *anthracene.*

By the action of bromine upon *dioxybenzoic acid* in dilute, cold aqueous solution, the authors obtained *monobromdioxy-*

benzoic acid, which crystallizes in long needles. Wien. Ak. Ber., No. 18, 1872.

Sulphoparaoxybenzoic Acid. Rudolph Kölle, who has prepared this acid in a pure state, and has examined it and several of its salts, confirms by his experiments, that by its production from paraoxybenzoic acid and anhydrous sulphuric acid, no isomeric sulpho-acid is formed, and that the pure potassium salt, when melted with excess of potassium hydrate, yields protocatechuic acid. Wien. Akad. Ber., 1872, No. 18.

Oxalic Acid.—Dr. H. Habedank proposes the following easy and rapid method of its purification: Commercial oxalic acid is dissolved in the smallest possible quantity of absolute alcohol, by the aid of heat, and is filtered hot, from the undissolved oxalate of calcium. In a few hours the greater part of the acid crystallizes out, and the mother liquor may be then used for the purification of another quantity. After the crystals have been allowed to drain, they are dissolved in boiling water, by which the oxalic ether is removed, and perfectly pure crystals are obtained. The alcoholic mother liquor may be also used for the preparation of

Oxalate of Ammonium, by neutralization with ammonia. Oxamid and oxamethan are formed along with oxalate, but are readily decomposed, by the addition of a little oxalic acid at a boiling temperature. The solution is filtered, rendered feebly alkaline, and crystallized. By recrystallization, the oxalate is obtained perfectly pure and white. Zeitschr. f. Anal. Chem., 1872, p. 382.

Mellitic Acid, in a not inconsiderable quantity, has been obtained by M. Schulze, among the products of oxidation of carbon, by solution of permanganate of potassium. A large quantity of oxalic acid, and several other acids, the nature of which he has not yet determined, are formed at the same time. Rép. de Pharm., June, 1872.

Tannic Acid.—The opinion of Sacc, that by the formation of gallic acid from pure tannic acid, no glucose is produced, but that only the elements of water are taken up, seems to

be confirmed by the experiments of Hugo Schiff, who has succeeded in reproducing tannic acid from gallic acid, by heating a mixture of gallic acid and oxychloride of phosphorus, at 212° to 248° (?). A substance was obtained, which, while possessing all properties of tannic acid, yields no glucose. It is reconverted into gallic acid, by treatment with water and hydrochloric acid, and an analysis proved it to differ from gallic acid, in containing less oxygen and hydrogen in the proportions necessary to form water. These experiments seem to prove that *tannic acid is not a glucoside.* Rép. de Pharm., June, 1872.

Tannin is now prepared, for technical purposes, principally from Chinese and Japanese galls. They are powdered, extracted by 3 to 4 parts of a mixture of highly rectified alcohol and ether, the solution is distilled to dryness by steam, the residue is mixed with 2 to 3 times its weight of hot water, free from iron, and allowed to rest a day, by which an insoluble green resinous substance is separated. The solution is then, if not entirely clear, filtered through animal charcoal, evaporated in vacuo to a thick syrup, in which condition it is spread upon well-tinned oven plates to cool and dry. The more ether is employed in proportion to the alcohol, the whiter will be the product. Zeitschr. d. Œst. Apoth. Ver., 1873, No. 3.

Dr. C. M. Kurtz observes, in connection with the above, that tannin is gradually substituted by dyers for the usual tannin-containing substances. Notwithstanding its comparatively high price, the saving in time, in labor, in dyestuff, &c., render it cheaper, and the colors upon the fabrics become purer and more decided. One pound represents: 40 pounds of sumach; 18 pounds of mirobalanes; 14 pounds of dividivi; or 11 pounds of nutgalls.

Tartaric Acid.—M. Jungfleisch has succeeded in preparing tartaric acid, by complete synthesis, from artificial succinic acid obtained from bromide of ethylene. The artificial acid obtained is a mixture of inactive tartaric acid and racemic acid, which the author has split into acids acting on the plane

of polarization to the right and to the left. These results invalidate the statement of Pasteur, that artificial organic bodies could not exert any influence upon polarized light, unless they are derived from substances which possessed such action; and shows that in this case the substance obtained possesses both the composition and physical properties of the natural product. Chem. and Drug., Feb. 1873, p. 48.

Tartarus Boraxatus is latterly generally manufactured in Europe in scales. Oscar Ficinus has examined the preparation of a renowned South German manufactory, and found it to consist of a mixture of Tartarus boraxatus prepared with cream of tartar and borax, and of the corresponding preparation of the French Codex made with boracic acid. When made according to the German Pharmacopœia, the author was unable to obtain a scaled preparation. Arch. f. Pharm., Jan. 1873, p. 22.

Citric Acid.—The following method for its quantitative determination is proposed: The liquid is neutralized with an alkali or acetic acid, according to its condition; 2 volumes ot alcohol of 95 per cent. is added, followed by acetate of barium, which throws down citrate of barium, while the acetates remain in solution. The citrate of barium is determined as sulphate, by moistening with sulphuric acid, and heating to redness. Pharm. Zeitschr. f. Russ., 1872, No. 14, p. 437.

Citrate of Iron and Quinia has been found by Prof. Bedford of very variable alkaloid strength as found in commerce. To test the samples, the author dissolved 100 grains of the salt in water in a test-tube, and added ether, followed by water of ammonia. The ether was decanted into a weighed capsule, the residue in tube agitated with further quantity of ether, the ether decanted and added to that first decanted, and allowed to evaporate spontaneously to dryness. It was then heated a few moments to 120° F., and the weight ascertained. Four samples examined indicated respectively 4.3, 8.2, 10.0, 11.5 per cent. of pure quinia. Some of the samples contained also cinchonia. The author recommends the process

as convenient and of easy execution. Am. Drug. Circ., March, 1873, p. 56.

Citrate of Iron and Quinia has also been examined by Mr. A. W. Gerrard, who found eight samples of the commercial compound to contain the following percentages of quinia respectively: 12, 5, 10, 16, 8, 16, 12, 9 per cent. The author states that some price lists quote three qualities of the salt, which abundantly explains why the compound varies in its quinia strength. Pharm. Journ. and Trans., 1873, p. 763.

Solution of Citrate of Iron and Quinia, when prepared according to R. Rother's method, as given in Pharm. and Chem. Rec., Dec. 1872, p. 274, is, according to that authority, permanent. One fluid ounce represents one-half troy ounce of the dry salt.

Igasuric Acid.—The experiments of H. Höhn, made with igasuric acid prepared from St. Ignatius beans, indicate that it is really iron greening *tannic acid.* Dr. H. Ludwig states that Winkler, as early as 1831, contended that the igasuric acid of Pelletier and Caventou was impure *gallic acid.* Arch. f. Pharm., Feb. 1873, p. 137.

Jervic Acid (Jervasäure).—When experimenting with white hellebore root, with a view to isolate a peculiar bitter principle contained in it—veratramarin—H. Weppen observed a peculiar warty formation of crystals, which proved to be composed of a new acid in combination with lead, and which the author named as above. He subsequently prepared the acid on a larger scale, the process pursued consisting in extracting the veratrum root with hot water, concentrating the liquids obtained, precipitating the filtered liquid by neutral acetate of lead in excess, and allowing to stand several weeks, to enable complete separation of the new compound. The precipitate produced contains, besides the impure crystals of jervate of lead, various—chiefly gummy—impurities, which are removed partly by treating the precipitate with dilute acetic acid, and partly by subsequent washing by decantation. The crystals so obtained from 80 kilogrammes root, when de-

composed with HS, yielded about 40 grammes impure acid, which was purified by dissolving in hot alcohol, decanting from undissolved matter, evaporating to dryness, and repeating this several times, until the acid became perfectly soluble in hot alcohol. The product was finally crystallized from water. When perfectly pure, the acid constitutes a white, light, crystalline powder, and is composed of $C_{14}H_{10}O_{12} + 2H_2O$ ($O=16$). It does not melt, and cannot be sublimed, is soluble in 100 parts cold, and in 10 parts boiling water, is insoluble in ether, and with difficulty soluble in alcohol. The new acid, being probably the same as that observed by Pelletier and Caventou, and which was assumed by them to be gallic acid, the author finds to be quite distinct not only from gallic acid, but also from all other acids that have been heretofore described. The author has prepared a number of its salts—among which the potassium, sodium, strontium, calcium, barium, silver, lead, and mercury compounds—and having subjected them all to analyses, is convinced of the correctness of the formula of the composition of the new acid, which differs from that of gallic acid in containing less hydrogen and more oxygen. It is likewise distinguished from gallic acid in not giving a blue-black color with the sesquisalts of iron, in not melting when heated, in its difficult solubility in alcohol, &c. Arch f. Pharm., 1873, Feb. and March, 112–124, 193 to 210.

Tanacetic Acid was obtained by Merletta, by subjecting the flowering tops of Tanacetum vulgare to distillation with water, concentrating the filtered residual to the consistence of honey, mixing this with lime and animal charcoal, and drying; then extracting the dry mass, first with water acidulated with muriatic acid, then with water acidulated with acetic acid, filtering the mixed liquids, and allowing to crystallize. Yellow crystals of tanacetic acid are formed, which is stated to be soluble in ether and alcohol, but not in water, is sharp and bitter to the taste, and forms crystallizable salts. Whether the product of the author is the tanacetin of Le Roy, or the tanacetic acid of Peschier, remains to be investigated. Pharm. Centralhalle, 1872, No. 30.

Vanillic Acid.—Recent experiments by Stokkebye determine that the white crystalline efflorescence upon vanilla beans is a well-defined acid. Formerly, it was variously regarded to be benzoic acid, cinnamic acid, or coumarin, but was subsequently determined, by Gobley and Vee, to be peculiar to vanilla, and was named by them *Vanillin*, under the impression that it was neutral. It possesses acid reaction, displaces carbonic acid from carbonate, and neutralizes alkaline solutions completely. Cold conc. sulphuric acid colors it yellow; but if it contains the least trace of nitric acid, a red color, similar to that produced upon brucia, is produced. Acids precipitate it from its alkaline solutions; it is freely soluble in alcohol, ether, chloroform, bisulphide of carbon, the fixed and volatile oils; it is sparingly soluble in water, yet sufficiently soluble in boiling water to permit crystallization. Pharm. Centralhalle, 1872, No. 30.

Carles, who has also experimented with the vanilla crystals, has obtained corresponding results. In addition to the reactions above mentioned, he mentions that conc. nitric acid reacts with it violently, producing oxalic acid; that it is browned by chlorine and bromine, and precipitated from its solutions by acetate of lead. Ibid., No. 31.

Nicotinic Acid.—$C_{10}H_8N_2O_3$ ($O = 16$), as obtained from nicotina by oxidation with nitric acid, by Dr. H. Weidl (see Nicotina, in this report), is a handsome, colorless, readily crystallizable substance. It forms compounds with other acids as well as with bases, some of which are characterized by their handsome crystalline form. Heated with lime, it forms pyridin = C_5H_5N ($O = 16$). The author alleges that his nicotinic acid is identical with the *carbopyridinic* acid of Huber, obtained by the latter by the oxidation of nicotina with chromic acid, and for which he found the formula $C_6H_5NO_2$ ($O = 16$); but this Weidl presumes is incorrect. Wien. Ak. Ber., No. 17, 1872.

ORGANIC BASES.

Alkaloids.—At the suggestion of Prof. Hlasiwetz, Dr. H. Weidl has for some time been engaged in the endeavor to ob-

tain from various alkaloids, among which cinchonia, berberina, and veratria, well-characterized compounds containing oxygen, but devoid of nitrogen. This result, which heretofore had been often sought, but never with success, has at last been attained by the author, and thus, without a doubt, new light will be thrown upon the constitution of these important substances. The experiments with cinchonia are in the most advanced state. By a peculiar method of oxidation, two nitrogenized compounds were obtained, of which one presents acid characters, crystallizes well, and forms handsome crystalline salts. When this acid is treated with nascent hydrogen, the nitrogen is removed in form of ammonia, and it is converted into a strong tribasic acid, which is likewise crystallizable, and, in its general behavior, corresponds to certain vegetable acids. The second product of the oxidation of cinchonia is also crystallizable, but further investigation is necessary to enable its perfect characterization. The author refers to these results now for the sake of priority, and expects to continue his investigations with larger quantities of the respective alkaloids. Ber. d. Akad. d. Wiss. Wien., 1873, 3.

Dr. J. Nowak proves by his experiments that chloroform is almost universally adapted to the removal of vegetable poisons from their aqueous solutions. In the instances of the *alkaloids* their solutions are rendered alkaline, and agitated with chloroform at common temperatures. In this manner he has succeeded in removing completely and rapidly from their solutions strychnia, quinia, quinidia, cinchonia, caffeina, theobromina, emetina, atropia, hyoscyamia, aconitia, veratria, physostigmina, narcotina, codeia, thebaina, nicotina, and conia. The solvent effect upon brucia, colchicia, and papaverina was somewhat slower, while heat was required with sabadillia, and narceina was taken up only in small quantities. Picrotoxin is best dissolved from acid solution. Morphia and solania are not at all removed by the chloroform either from acid or from alkaline solution.

From their solutions in chloroform all the substances that have been removed by it from alkaline aqueous solutions may be again removed by agitation with acidulated water, while

fatty and other admixtures remain dissolved in the chloroform.

By a systematic course of experiments made with weighed quantities of the different poisons mixed with parts of a corpse selected for the purpose, the author obtained results which were entirely satisfactory. In many instances the entire quantity of poison was recovered; in others the greater part; and the high degree of purity of the recovered poisons enabled the rapid establishment of their identity. Wien. Ak. Ber., 19, 1872; Journ. Applied Chemistry, 1872; Am. Journ. Pharm., 1873; Pharm. and Ch. Rec., 1872.

Reaction of some Alkaloids with Sugar and Sulphuric Acid.—R. Schneider contributes the following in Poggendorf's Annalen, 1872:

Morphia.—A few milligrammes, mixed with 6 to 8 parts of sugar, will, when brought in contact with pure concentrated sulphuric acid upon a porcelain plate, produce a handsome purple-red color, which in the course of a quarter to half an hour will change to blue-violet, dingy brown, and finally dingy yellow. Water added to the purple-red mixture causes rapid decoloration. The coloration is still intense with $\frac{1}{10000}$th gramme morphia, and is distinct with $\frac{1}{100000}$th gramme. Sugar of milk produces the same effect as cane sugar, but weaker.

Codeia produces a similar coloration, and the sulphuric acid need not be so concentrated as for morphia. They are distinguished by the solubility of codeia in chloroform.

The remaining *opium bases*, the *cinchona bases*, *strychnia*, and *brucia*, exhibit no characteristic coloration, although with *quinia* the characteristic fluorescence is exhibited with marked distinctness. According to another authority, however, *quinia* exhibits no fluorescence, but, to the contrary, a green-yellow color, which after five minutes is changed to brown. A mixture of *quinia* and *morphia* reacts like morphia alone. *Atropia*, *colchicia*, *emetia*, and *picrotoxin*, have no reaction. One milligramme of *aconitia*, mixed with a drop of moderately concentrated solution of sugar, and then with a small drop of con-

centrated sulphuric acid, shows upon the edges of the liquid a rose-red coloration, which rapidly changes to dingy violet and brown. Aconitia is therefore the only alkaloid (examined by the author) that in forensic analysis may be mistaken for *morphia*, or *codeia*, when the above test is resorted to. Ph. Centralhalle, 1873, No. 3, p. 17.

Mr. J. H. Buckingham has observed that *sulphomolybdate of ammonia* produces characteristic color reactions with quite a number of organic compounds besides morphia, with which it produces a blue color. Thus, while quinia, quinidia, cinchonia, asparagin, strychnia, atropia, and caffeina are not colored at first, they produce light blue colors upon standing; while *santonin* is first colored light purple, and finally changes to dark blue; *menispermia*, light yellow, finally dark blue; *solania*, yellow, finally dark blue; *veratria*, yellow-green, passes to dark brown, finally dark blue; *meconin*, light green, finally light blue; *codeia*, green, finally dark blue; *phloridzin*, dark blue, and so remains; *salicin*, purple, passes to blue, brown-red, and finally dark blue; *morphia*, dark red, then purple, finally dark blue; *digitalin*, crimson, then purple, finally dark blue; *brucia*, brick-red, finally dark blue; *aconitia*, light yellow-brown, then brown, finally dark blue; *piperina*, brown-red, finally dark blue; *berberina*, purple, finally dark blue; and *cubebin*, crimson, finally dark blue. The test liquid is prepared by carefully heating 8 grains of molybdate of ammonia with 2 drachms chemically pure sulphuric acid (C. P.), and should be prepared fresh as wanted. Am. Journ. Pharm., April, 1873, p. 149.

A new reagent for alkaloids has been found by Schering in *phosphotungstic acid*, which like *phosphomolybdic acid* precipitates the alkaloids from their acid solutions, even when quite dilute. One part strychnia in 200,000 affords a distinct precipitate, as does also 1 part quinia in 100,000. The precipitates are voluminous, but afterwards condense, and are readily filtered off and washed. The importance of this new reagent is great, because it affords a rapid and a ready means of isolating poisonous alkaloids in forensic analyses, which may

then readily be subjected to further examination. Pharm. Centralhalle, 1873, No. 13.

Prof. J. M. Maisch, referring to the observation of a friend, "that *quinia* and *cinchonia*, to which sweet spirit of nitre and a few drops of ammonia had been added, produces, with a little muriated tincture of iron, a red color similar to that formed with sulphocyanide of potassium and iron, while *morphia*, treated in the same way, produced a beautiful green color," has repeated the experiments with commercial spirit of nitrous ether, obtained similar reactions, which further experiments proved to be owing to acetic acid present in the spirit. Spirit of nitrous ether, which had been recently prepared by Redwood's process, and was entirely free from acetic acid, did not produce the color reaction. Am. Journ. Ph., Feb. 1873, p. 67.

Bromides of the Alkaloids.—Mr. George McDonald prepares the so-called bromides of the alkaloids, quinia, morphia, and strychnia, by double decomposition between their sulphates and bromide of barium. The latter salt is prepared for the purpose in solution (see Bromide of Barium, in this report). The *hydrobromate of quinia* is prepared by dissolving 1 ounce of medicinal sulphate of quinia in a quart of boiling water, and adding the solution of bromide of barium until a precipitate ceases to be produced. The solution is then filtered, concentrated by gentle heat until crystals begin to form, and is then set aside to crystallize; the crystals are drained, expressed between bibulous paper, and set aside to dry. Thus obtained, bromide of quinia is soluble in 40 parts of cold water. As it does not effloresce when exposed to air, the author regards it to be anhydrous. The hydrobromates of *morphia* and of *strychnia* are prepared after the same method, with slight modifications. They both crystallize well, and are quite as soluble as their sulphates. Am. Journ. Pharm., 1872, p. 447.

Hydrocyanates of the Alkaloids.—By the experiments of Prof. Flückiger, it seems to be proven that hydrocyanates of the alkaloids do not exist. The precipitates produced by cyanide of potassium in solutions of the salts of berberina, quinia, strychnia, and morphia, were found to be entirely

free from hydrocyanic acid. The freshly precipitated alkaloids were diffused in water, and hydrocyanic acid passed through the mixture without effecting solution. If the alkaloids are dissolved in alcohol and the solution is saturated with hydrocyanic acid, the pure alkaloids are obtained on evaporation. Am. Journ. Pharm., 1872, p. 539; N. Jahrb. f. Ph., Sept. 1872, 138–140.

Compounds of the Alkaloids with the Biliary Acids.—The observations of Malinin in 1868, that quinia formed with the biliary acids a salt of difficult solubility, and that this, in consequence, when administered, would pass undecomposed, has prompted W. F. de l'Arbre to experiment comprehensively with the following results:

1. The soluble salts of strychnia, brucia, quinia, cinchonia, veratria, emetia, quinidia, &c., form, when in contact with ox, pig, or dog bile and glycocholate, hyoglycocholate or taurocholate of soda, compounds which are generally with difficulty soluble. Some of these compounds are produced by a complete substitution of the alkaloid for the alkali in combination with the biliary acid, while other precipitates of the biliary acid with the alkaloid contain an excess of either alkaloid or acid.

2. Such an excess of acid is often formed when a solution of a compound of a biliary acid with soda, neutralized with acetic acid, is employed, and is always formed when an excess of acetic acid has been used. The precipitate produced by pig's gall and by hyoglycocholate of soda nearly always contains excess of the biliary acid.

3. The compound of the biliary acids with the alkaloids are partly amorphous, partly crystalline. The compounds of glycocholic acid with morphia and strychnia, of hyoglycocholic acid with brucia, and of taurocholic acid with morphia, are crystalline. The amorphous compounds have a terebinthinate, adhesive consistence at ordinary temperature, while the crystalline compounds become so only at an increased temperature.

4. All of these compounds are decomposed by dilute muri-

atic acid with formation of muriate of the alkaloid and liberation of the peculiar acid or acids with which the alkaloid may have been combined. Precipitates are, however, produced in the presence of muriatic acid, if by the free addition of the biliary compound it has been neutralized. The compounds of the alkaloids with (our) biliary acids are decomposed in the stomach and brought into a readily absorbable state; but by copious effusion of bile into the stomach even soluble salts of the alkaloids may be decomposed and the alkaloid precipitated.

5. Ammonia and other bases decompose the biliary salts; some completely, with precipitation of the bases, others only partially, a certain proportion of the alkaloid remaining in aqueous solution.

6. All compounds of the biliary acids with the alkaloids, even those of the most difficult solubility (quinia), are soluble in excess of bile or of the various salts of the biliary acids.

7. Solutions of the cholates of the alkaloids in excess of bile, or of cholate of soda, are capable of diffusing the alkaloid, and this is true even of pure compounds without such excess.

8. Glycocholate of strychnia, dissolved in excess of bile and injected subcutaneously, acted upon frogs somewhat less energetically than the nitrate.

9. Glycocholate of quinia acts quantitatively, like the muriate.

10. The compounds of cholic acid with morphia, conia, and nicotina, are very soluble. Apoth. Zeit., 1872, No. 27; from N. Jahrb. Ph.

Alkaloids of the Papaveraceæ.—The following compilation of the alkaloids of the Papaveraceæ, by Dr. Hermann Ludwig, embracing the latest descriptions and discoveries of their most important characteristics, is regarded of sufficient importance to be incorporated in this report with such brevity as is possible without rendering the facts indistinct.

(The chemical formulas have been conformed to the old system.)

A.—FROM OPIUM (*of Papaver somniferum*).

I. *Morphia.* Discovered by Sertürner, 1804; also Seguin, 1804, but not published until 1814. Formula: $C_{34}H_{19}NO_6$; crystalline, alkaline reaction; rotates to the left.

Artificial Bases generated from Morphia.

1. *Apomorphia.* Discovered by Mathiessen and Wright, 1871, from morphia by the agency of hydrochloric acid. Formula: $C_{34}H_{17}NO_4$; amorphous; white; greened by air; emetic.

2. *Desoxymorphia.* Discovered by Wright, 1871. Formula: $C_{34}H_{19}NO_4$.

II. *Narcotina.* Discovered by Derosne, 1803 (his Sel d'Opium). Formula: $C_{44}H_{23}NO_{14}$. Exists uncombined; crystalline; neutral reaction; salts readily decomposed; synonym: *Trimethylnornarcotina.*

Products of Decomposition of Narcotina.

1. *Dimethylnornarcotina.* Discovered by Mathiessen and Foster; by action of hydrochloric acid. Formula: $C_{42}H_{21}NO_{14}$.

2. *Monomethylnornarcotina.* Formula: $C_{40}H_{19}NO_{14}$.

3. *Nornarcotina.* By the action of hydriodic acid (concentrated) upon narcotina, three equivalents of methyl are abstracted. Formula: $C_{38}H_{17}NO_{14}$.

4. *Cotarnina.* Discovered by Wöhler, 1844, by heating narcotina with peroxide of manganese and dilute sulphuric acid. Formula: $C_{24}H_{13}NO_6 + 2HO$.

5. *Opianic Acid*, formed with cotarnina. Formula: $C_{20}H_{10}O_{10}$.

6. *Meconin.* Discovered (in opium) by Dublanc, Jr., 1826; obtained from opianic acid by Anderson, by the action of nascent hydrogen. Formula: $C_{20}H_{10}O_8$.

III. *Hydrocotarnin.* Discovered by O. Hesse, 1871. Formula: $C_{24}H_{15}NO_6$; monoclynical crystals; colorless liquid at 50° C. (= 122° F.), volatilized at 100° C. (= 212° F.).

IV. *Codeia.* Discovered by Robiquet, 1832. Formula according to Anderson $C_{36}H_{21}NO_6 + 2HO$; colorless, rhombic crystals; strongly alkaline; soluble in 80 parts of cold and 2 parts of hot water; rotates to the left.

Artificial Bases of Codeia.

1. *Apocodeia.* Discovered by Mathiessen and Burnside, 1871. Formula: $C_{36}H_{19}NO_4$; by action of chloride of zinc on codeia; amorphous; emetic.

2. *Desoxycodeia.* Discovered by Wright, 1871. Formula: $C_{36}H_{21}NO_4$.

V. *Narceina.* Discovered by Pelletier, 1832. Formula: $C_{46}H_{29}NO_{18}$; colorless crystals; very readily soluble in boiling water and alkaline solutions; neutral reaction.

VI. *Thebaina.* Discovered by Thiboumèry, 1835 (the paramorphia of Pelletier.) Formula (by Anderson) $C_{38}H_{21}NO_6 + 2HO$; colorless crystalline plates, resembling benzoic acid; not sublimable; melts at 193° C. (= 379° F.); strongly alkaline.

Artificial Bases of Thebaina.

1. *Thebanina* = $C_{38}H_{21}NO_3$; and

2. *Thebaicina* = $C_{38}H_{21}NO_6$. Discovered by O. Hesse, 1870; produced by the action of concentrated hydrochloric acid.

VII. *Pseudomorphia.* Discovered by Pelletier and Thiboumèry, 1835. Formula: $C_{34}H_{19}NO_4$; silky crystals = + 2HO to 8HO (according to O. Hesse, 1867); tasteless, as are also its salts; does not react alkaline or neutralize acids; not poisonous; color reactions similar to morphia (Magendie).

VIII. *Prophyroxin.* Discovered by E. Merck, 1837. According to O. Hesse (1870), it is a mixture of bases, among which is *Meconidina.* Formula: $C_{42}H_{23}NO_8$; amorphous; melts at 58° C. (= 136° F.); rendered purple-red by acids, especially dilute sulphuric acid.

IX. *Papaverina.* Discovered by E. Merck, 1848. Formula: $C_{42}H_{21}NO_8$ (O. Hesse); colorless, delicate, prismatic crystals; tasteless; without reaction upon red litmus; soluble in acetic acid without neutralizing it; its solution is precipitated by potassa and ammonia, forming a resinous precipitate which soon becomes crystalline, and is insoluble in excess of precipitant.

X. *Cryptopia.* Discovered by T. Smiles (T. and H. Smith), 1867. (80 to 100 cwt. opium = 5 ounces hydrochlorate.) Formula: $C_{42}H_{23}NO_{10}$ (O. Hesse); crystallizable; alkaline reaction; taste of its salts bitter, subsequently sharp burning, reminding of ol. menth. pip.; its salts generally separate from their solutions in gelatinous form.

XI. *Codamina.* Discovered by O. Hesse, 1870. Formula: $C_{40}H_{25}NO_8$. Colorless crystals; melts at 126° C. (= 259° F.); its hydrochlorate is amorphous and neutral, but is decomposed by heat; soluble in concentrated nitric acid, with handsome dark-green color; same color produced by perchloride of iron.

XII. *Laudanina.* Discovered by O. Hesse, 1870. Formula like that of codamina: $C_{40}H_{25}NO_8$; crystallizes in six-sided prisms; reacts alkaline, neutralizing acids completely, and forming bitter salts; colored emerald green by perchloride of iron, and orange-red by concentrated nitric acid; melts at 166° C. (= 331° F.); forms with the hydrate of potassa and soda crystalline compounds.

XIII. *Lauthopina.* Discovered by O. Hesse, 1870. Formula: $C_{46}H_{25}NO_8$; white, powdery, microscopic prisms; tasteless; neutral to red litmus; does not neutralize acetic acid; very sparingly soluble in alcohol, ether, and benzin; readily dissolved by chloroform.

XIV. *Protopina.* Discovered by O. Hesse, 1871. Formula: $C_{40}H_{19}NO_{10}$; colorless, very minute prisms, forming globular and warty masses; melts at 202° C. (= 395° F.); strong basic reaction; bitter salts, which do not gelatinize.

XV. *Laudanosina.* Discovered by O. Hesse, 1871. Formula: $C_{42}H_2NO_8$; white, light, crystalline flakes; melts at 89° C. (= 192° F.); not sublimable; reacts basic; neutralizes acids completely; forms extremely bitter salts; not colored by perchloride of iron.

Deuteropin. Supposed to exist (O. Hesse, 1871); requires further investigation to establish its identity.

Opiania. Discovered by Hinterberger, 1871; $C_{66}H_{36}N_2O_{21}$; could not again be found by Anderson.

Metamorphia. Discovered by Wittstein; requires further investigation.

B.—FROM PAPAVER RHŒAS.

XVI. *Rhœadina.* Discovered by O. Hesse, 1865, in capsules of P. rhœas; found also in all the better qualities of opium; white, nearly tasteless prisms; decomposed by acids, with formation of a magnificent purple color (probably related to the *porphyroxin* of Merck). Formula: $C_{42}H_{21}NO_{12}$. It may be converted into

Rhœagenina. Formula: $C_{42}H_{21}NO_{12}$, which is alkaline and crystallizable.

C.—FROM CHELIDONIUM, GLAUCIUM AND SANGUINARIA.

XVII. *Sanguinarina* (*Cheterythrina*). Discovered by Dana, 1830, in Sanguinaria Canadensis; by Polex, 1838, and by Probst, in Chelidonium majus. Formula: $C_{38}H_{17}NO_8$ (Schiel), or $C_{34}H_{15}NO_8$ (Flückiger); white crystals; pungent taste; red salts.

XVIII. *Chelidonina.* Discovered by Polex, 1839; Probst and Reuling, 1839, in Chelidonium majus. Colorless crystals; pungent taste; colorless salts, which are strongly bitter and pungent.

Apomorphia.—The well-known instability of apomorphia, induced Hermann Blaser to experiment with a view to the preparation of a stable solution. Having determined that the decomposition is not produced by the influence of light or heat, but is largely due to the solvent, the author, after trying various solvents, finds simple syrup to be the best, provided air is excluded. Such a solution (of the hydrochlorate) showed no change, and produced its proper emetic effect after standing several weeks. A syrup thinner than that of the Pharm. Germ. will not answer.

The author finds that English apomorphia corresponds fully to the characteristics of that alkaloid. It is a gray-white, crystalline powder, produces colorless solutions, for which heat is required to effect it completely. Its ordinary solutions are not changed with green coloration. German

apomorphia differs very materially from the English. It is a yellow to gray-yellow amorphous powder, produces yellowish-brown solutions, and is medicinally less effective. N. Rep. f. Pharm., 1872, No. 7, p. 411.

Narceina.—The isolation of narceina for forensic determination is conveniently effected, according to F. Salomon, by the use of carbolic acid. The substance supposed to contain the alkaloid, is treated in the usual manner for separating alkaloids, *i. e.*, by taking up the residue, remaining after evaporating the alcoholic extraction with water, acidulating the aqueous solution, treating it with petroleum, ether, benzin, amylic alcohol, or chloroform, then rendering it alkaline, and treating in the same manner. Part of the narceina is taken up from the alkaline solution by the amylic alcohol, from which it may be obtained by evaporation, but the greater part remains in the residual liquor. This is neutralized with dilute sulphuric acid, and agitated with an equal volume of carbolic acid. The carbolic acid separates clear, but if not rapid enough, the separation is accelerated by dilution with water and agitation. After several agitations, the supernatant aqueous liquid is decanted, the residual carbolic acid is washed with a little water, and is then evaporated. The amorphous residue is purified by treatment with acidulated water, filtering, and neutralizing the solution, evaporating and taking up the residue with absolute alcohol, which will leave the narceina sufficiently pure. Of 0.05 gramme of narceina mixed with food, and treated in the manner described, the author obtained 0.005 gramme from the amylic alcohol solution, and 0.036 gramme from the aqueous liquid, in a perfectly pure condition. Zeitschr. f. Anal. Chem., 10, 484; N. Rep. f. Pharm. 1872, No. 7, p. 414.

Quinia.—Professor C. Bing has made some interesting observations upon the power which quinia possesses, in retarding the fermentive action of acids and ferments proper upon starchy and saccharine solutions. (See Ferments, in this report.)

The washings produced during the preparation of the

quinia from its sulphate, by the addition of ammonia, containing always an appreciable amount of quinia, Mr. F. R. Williams suggests the recovery of such quinia by the addition of tannic acid, almost insoluble tannate being produced. Pharm. and Chem. Rec., May, 1873, p. 174.

Sulphate of Quinia, which was adulterated with 10 per cent. of anhydrous sulphate of soda, has been met with by J. Biel. It was pretended to be of German manufacture. Am. Journ. Pharm., 1872, p. 540; Pharm. Zeitschr. f. Russ., 11, 367.

Hager has found that a mixture, prepared by mixing 1 part of sulphate of quinia, with 100 parts of cold coffee, and 30 to 50 parts of chloroformated syrup (see Syrups, in this report), possesses but feeble bitterness, and he recommends such a mixture to disguise the extreme bitterness of quinia. If the mixture is effected with hot coffee, or the quinia is dissolved by the aid of an acid, the bitterness reappears. Ordinary molasses may be substituted for the chloroformated syrup, but the latter is better. Pharm. Cent. Halle, 1872, No. 4, p. 28.

Delioux de Savignac recommends the following methods of administration: 1. Wrapped in wafers as the simplest method; 2. Pills made with tartaric acid, in the proportion of 1.0 part of the sulphate, to 0.2 part of the acid, the latter increasing the febrifuge value of the alkaloid, and rendering it more soluble; 3, in solution with dilute alcoholic menstrua (whisky, &c.); 4, in coffee or tea, which disguise the taste to a satisfactory extent, using preferably a little lemon-juice, to render the tannate formed soluble; 5, in the form of suppositories, which is preferable to clysters, especially with children. Apoth. Zeit., 1872, No. 33.

Soluble Sulphate of Quinia.—J. Dondé obtains the soluble sulphate of quinia in crystals, by using the following exact proportions: Twenty-two grammes of sulphuric acid of 66°, is mixed with 2 litres of rain-water; 150 grammes of basic sulphate of quinia is added, the mixture agitated until solution is effected. It is then filtered and evaporated to 600

grammes, when upon cooling the soluble sulphate will crystallize out, and is removed after standing 24 hours. The mother liquor will yield additional crystals. Am. Journ. Pharm., 1872, p. 446.

Tannate of Quinia.—Dr. Sistack recommends the tannate of quinia as a substitute for the sulphate, and states that it does not produce the symptoms usually attendant upon the continued or free administration of the sulphate. While Dr. Sistack admits that the tannate must be administered in larger doses, Dr. Hager in a note, states that by experiments upon his own person and others, he has found it to be only of one-tenth the medicinal value of the sulphate, and that nine-tenths may be found in the urine and fæces. Pharm. Centralhalle, 1872, No. 27.

Picrate of Quinia possesses, according to the experiments of Dr. Masse, less curative power in the treatment of intermittent fevers, no curative power in bilious intermittent fever, and on account of its bitterness is difficult to administer. Am. Journ. Med. Sci., July, 1872, p. 252.

Quinidia.—De Vrij recommends a method for separating this alkaloid from commercial chinoidin, which depends upon the sparing solubility of bitartrate of quinidia. One hundred grammes of chinoidin is dissolved by the aid of gradual heat, in a solution of 50 grammes of tartaric acid, in 200 grammes of water, the solution is stirred vigorously with a glass rod, at the same time rubbing the sides of the vessel (of glass), and then allowing it to rest. If the chinoidin contains quinidia, and generally it does, a more or less thick crystalline magma is formed after standing a few days, which is transferred to a strainer, allowed to drain as much as possible, is expressed gently, dissolved in 14 parts of hot water, and filtered. Upon cooling, bitartrate of quinidia crystallizes out, which may be further purified by recrystallization. From 10 grammes of Howard's chinoidin, the author obtained 2.3 grammes of bitartrate of quinidia. Pharm. Centralhalle, 1872, No. 26, from Ch. Cent. Bl.

Sulphate of Cinchonia, when administered in solution in divided doses, so that the last dose shall be given about 12 hours before the expected paroxysm, will, according to Briquet, cure intermittent fever in a great majority of cases. It is a certain febrifuge, free from all ill effects. Am. Journ. Med. Sci., Jan. 1873, p. 243.

Chinamina.—O. Hesse describes a new alkaloid, obtained by him from the bark of *C. succirubra*, cultivated in India, and which he names as above. It crystallizes in the form of exceedingly delicate long white asbestos-like prisms, containing no water of crystallization, is insoluble in water and alkaline solutions, very sparingly soluble in dilute alcohol, freely soluble in alcohol, ether, and benzin, from which it crystallizes in the form above described. With acid it forms salts, which are readily soluble in water. The *muriate* is amorphous, while the *neutral sulphate* is crystallizable, but with difficulty, forming under favorable circumstances short prisms and six-sided tablets. In its solubility in ether, this new alkaloid is intermediate between quinia and cinchonia. In its isolated state it is scarcely bitter, but its salts are quite so. Its ultimate analysis is deferred until a larger quantity is obtained. Pharm. Centralhalle, 1872, No. 27, from Ber. d. d. Chem. Ges.

Brucia.—According to Schonn, chlorine-water, oxygenated water, chromic acid, hypochlorite of soda, and some other salts, produce with brucia the same reaction that does nitric acid. Journ. de Pharm. et de Chim., Aug. 1872.

Caffeina (*Theina*).—R. Würthner prefers the method of Mulder for the extraction of theina from tea-leaves. The method consists in digesting tea-leaves at a temperature of 212° on a water-bath three or four times with distilled water for from half to one hour each time, mixing the filtered liquids, adding a small portion of magnesia, evaporating to dryness, extracting the residue with ether, and weighing the residue from the distillation of the ethereal solution as pure theina, which is then obtained in handsome white needles. The experienee of the author leads him to the following suggestion: 1. That it is better to evaporate the aqueous extraction to a

syrupy consistence before adding the magnesia. 2. That the dry residue so left should be powdered very finely before agitating with ether. 3. That the digestion with ether should be of considerable duration, with frequent agitation, should be repeated several times, and finally the magnesia residue or filter washed with ether as long as a drop of the solution leaves a residue upon evaporation on a watch-glass. The extraction of tea-leaves with water containing sulphuric or phosphoric acid is not necessary, the author's results even indicating the contrary, as the same tea yielded less theina when extracted with acidulated water than when extracted with pure distilled water. It has been contended that the use of magnesia in the process of Mulder caused a diminution of the yield. Experiments made with pure theina prove this to be incorrect. The want of proper success seems to reside in the failure of experimenters to extract the magnesia precipitate properly with ether. The process of Mulder is as readily applied to the extraction of theina from coffee and from guarana, and the author gives the percentages obtained by the method from a number of Chinese teas, from Cape tea, guarana, and from Paraguay tea. Pharm. Zeit. f. Russ., 1872, No. 23.

Aubert separates caffeina from coffee by a new method, using chloroform, which seems to give a greater yield than any method heretofore in use. Raw coffee yielded 0.709 to 0.849 per cent. The author's experiments on the influence of a roasting temperature upon the caffeina are favorable. Java coffee, roasted to a light brown, had lost none of its caffeina; an infusion prepared from it contained four-fifths, the remaining one-fifth was found in the dregs. When roasted until nearly black, a small percentage (0.144 per cent.) of the caffeina was dissipated; but it was found that an infusion prepared from it contained nearly all the caffeina, so that from an over-roasted coffee, an infusion can be prepared that contains more of the alkaloid than from that of light-roasted coffee. Apoth. Zeit., 1872, No. 50.

The determination of caffeina in tea by the aid of chloro-

form, is conducted by E. Lieventhal as follows: The finely powdered tea is boiled for several minutes in a small flask, with 3 parts of chloroform, a long tube being attached for its condensation and return to the flask. Upon cooling, the contents of the flask are poured upon a filter and washed with chloroform until the washings pass colorless, when the filtrate is transferred to a clean, wide-necked flask, connected with a condenser, and distilled to dryness. The residue in the flask is boiled repeatedly with distilled water, with frequent stirring with a glass rod; the solution is filtered and evaporated, when the alkaloid will remain in the form of a crystalline mass. If the chloroform has been entirely distilled off, the caffeina will be of such purity that chlorine-water and ammonia will produce no color reaction. By this method the author has succeeded in estimating caffeina quantitatively with perfectly satisfactory results. Apoth. Zeit., 1873, No. 7.

Isopyrina has been obtained by F. A. Harsten from the roots of *Isopyrum thalictroides.* The concised root is boiled with water, the decoction is filtered, evaporated to a thin syrupy consistence, and treated with ammonia. A precipitate, apparently chiefly consisting of tannic acid and hydrate of alumina is formed. The precipitate when dried yields the alkaloid to ether, by the evaporation of which it is obtained in form of a white-yellow amorphous powder. It is bitter, and forms with dilute muriatic acid an amorphous salt, which is not precipitable from its solution by chloride of ammonium. From the residual roots, remaining after boiling with water, the author obtained a second alkaloid.

Pseudoisopyrina.—To obtain this the author extracted the roots, after extraction with water as above, with alcohol, evaporated the tincture until the alcohol was all removed, and added ammonia to the aqueous residue. The precipitate formed yielded to ether the alcoholoid in question, which crystallized in starry tufts of needles. Its muriate is precipitated by chloride of ammonium, which serves as a method to separate it from isopyrina if so contaminated. Both alkaloids are decomposed by concentrated mineral acids. They have not

been subjected to elementary analysis, as the quantities obtained were insufficient for that purpose. Chem. Cent. Bl., 1872, No. 33.

Boldina, a new alkaloid, has been discovered in the Boldo tree of Chili (Nat. Ord. Moniminaceæ), by Messrs. Bourgoin and Verne. Journ. de Pharm. et de Chim., Aug. 1872.

Curarina.—F. Salomon finds that carbolic acid will separate curarina with the same facility as narceina. (See Narceina, in this report, page 377.) The curarina remains entirely in the alkaline liquid obtained by the treatment recommended by the author for narceina. N. Rep. f. Ph., 1872, No. 416; Zeitschr. f. Anal. Ch., x, 484.

Lobelina.—W. D. Richardson demonstrates that the separation of lobelina, by means of ether, as directed in the process of Prof. Procter, is by no means complete. The residue, when shaken with fresh portions of ether, yielded additional quantities of the alkaloid, and the aqueous washings subsequently obtained still possessed an alkaline reaction and an acrid taste, and yielded a precipitate with iodohydrargyrate of potassium. The experiments of the author, with reference to its stability, seem to indicate that it is very prone to change. The pure alkaloid, exposed for four days in a watch-crystal, was changed to a resinous consistence, darkened in color, and scarcely soluble in water. The aqueous solution of the alkaloid so exposed afforded, upon the addition of muriatic acid, a white precipitate, which was changed to brown by heat; while an aqueous solution, exposed for a longer time, slowly deposited a white sediment, which, after decanting the supernatant liquid, assumed a brown color. Am. Journ. Pharm., 1872, p. 291.

Hyoscyamia.—It is generally assumed that this alkaloid is crystallizable, while later investigations seemed to indicate that it is amorphous. Dr. G. Merck now finds it to be *liquid.* Having obtained it in the form of an amorphous mass, he subjected this to careful distillation in a current of hydrogen, and obtained a colorless, thin, oily liquid, resembling conia in odor. It is readily soluble in alcohol and ether, and is tolera-

bly soluble in water. It is only partly soluble in chloroform and benzole, is browned by exposure to air, becoming thicker, and of a more intense, unpleasant odor. In this condition it is no longer entirely soluble in ether. It reacts strongly alkaline, neutralizing acids perfectly, and forming salts which are freely soluble in water, but difficult to crystallize. The nitrate forms long needles, which are with difficulty freed from their mother liquor. The oxalate was obtained in dry crystalline form. The sulphate and hydrochlorate refused to crystallize. N. Jahrb. f. Pharm., Oct. 1872; N. Rep. f. Ph., 1873, No. 2, p. 115.

Conia.—The artificial conia prepared by Hugo Schiff, has been found by him to be merely isomeric, but not identical with conia, and he proposes the name of *paraconia* for it. Am. Journ. Pharm., 1872, p. 539; Pharm. Zeit., 1872, No. 83.

Nicotina.—By the oxidation of nicotina with nitric acid Dr. H. Weidl has obtained a new acid, nicotinic acid, produced according to the following equation:

$$\underbrace{C_{10}H_{14}N_2}_{\text{Nicotina.}} + 6O = \underbrace{C_{10}H_8N_2O_3}_{\text{Nicotinic acid.}} + 3H_2O \quad (O = 16).$$

The author also offers some preliminary observations upon the constitution of nicotina, and believes that the alkaloid may be produced from the aldehyde of pyrotartaric acid, in a similar manner to which aldehydin is produced from the aldehyde of crotonic acid. Wien. Akad. Ber., xvii, 1872.

Propylamina, which has lately fallen into almost entire disuse, is, according to Namias, of sufficient value in the treatment of disease to merit extensive application. In the treatment of various forms of rheumatism, the author has found it uniformly reliable. He also finds it remarkably active in reducing the action of the heart; regards it as superior to digitalis, and preferable to it, if for no other reason, on account of its comparative harmlessness. Its action upon the urinary secretions is similar to that of digitalis. Apoth. Zeit., 1872, No. 36, from Giorn. Veneto di Science Med.

Dulcitamina.—M. G. Bouchardat obtained, by the action of ammonia on the hydrochloric ether of dulcit ($C_{12}H_{14}O_{12}$), an artificial base, *dulcitamina*, = $C_{12}H_{15}NO_{10}$. The hydrochlorate of dulcitamina is prepared by heating the monohydrochloric dulcitane ($C_{12}H_{11}ClO_8$) with alcohol saturated with ammonia. By treating the chlorhydrate of dulcitamina with oxide of silver, the alkaloid is liberated. This is a very strong base, drives ammonia from its combinations, blues reddened litmus, attracts carbonic acid from the air, and is obtainable from its solution by evaporation in the form of an uncrystallizable syrup. Its salts are neutral and crystalline. It contains, among organic bases, the largest proportion of oxygen. Rép. de Pharm., June, 1872.

Isuretina.—By neutralizing an alcoholic solution of hydroxylamina with concentrated hydrocyanic acid, setting the liquid aside forty-eight hours, and then evaporating it at 100° to 120° F., large crystals are obtained, which, when purified by recrystallization, are found by Lossen and Schifferdecker not to be a hydrocyanate, but a new base, which the authors call isuretina, and which is isomeric with urea. The new base crystallizes in prisms, is very soluble in water, is sparingly soluble in cold alcohol or in ether, but is freely dissolved by boiling alcohol. It has an alkaline reaction, and forms crystalline salts with hydrochloric, sulphuric, oxalic, and picric acids. At 212° F. it commences to decompose, and at a higher temperature decomposes rapidly. Rép. de Pharm., June, 1872.

Fuchsin.—Giuseppe Romis, in a communication to the Academia Medico-fisica of Florence, suggests a method of its detection, which is based upon the following: 1. The property of amylic alcohol to dissolve fuchsin, and which becomes evidenced by the red color communicated to it. 2. The negative action of amylic alcohol upon most substances that communicate a red color to fruits. 3. The solvent action of amylic alcohol upon the natural coloring matter in red wines. [illegible] syrups, confections, &c., are shaken with amylic [illegible] in equal volume—the confections must be dilut[illegible]

—and the mixture is allowed to rest. In a short time the amylic alcohol separates; colorless if no fuchsin is present; of a red color if it is present.

As the natural coloring matters of red wines are dissolved by amylic alcohol, the wine, under examination, must first be treated with solution of subacetate of lead, by which they are precipitated; and if the wine is then treated, as above indicated, fuchsin is evidenced in the same way as in the instance of fruit syrups. Zeitschr. f. Anal. Chem., 1872, No. 2, p. 176.

Carbazol, a new substance, containing nitrogen, and incidentally discovered by Gräbe and Glaser during the purification of crude anthracene, has been obtained by them also by passing anilin or diphenylamine through red-hot tubes. The raw material so obtained, resembling crude anthracene, is dissolved in tar oils, possessing a boiling-point over 100° C. (= 212° F.), (these consisting of mixture of toluol and xylol), the solution is filtered, 1½ parts of picric acid is added, and the mixture is warmed until solution is effected. Upon cooling, *carbazol-picric acid* separates in red columnar crystals, which are well washed with tar oil, and then decomposed by ammonia-water. Carbazol separates, and when recrystallized forms colorless tables and leaves. The authors give it the formula, $C_{12}H_9N$; it melts at 238° C. (= 460° F.), and boils at 254° to 256° C. (= 489° to 492° F.); is insoluble in water, but readily soluble, especially by the aid of heat, in alcohol, ether, benzole, bisulphide of carbon, glacial acetic acid, and chloroform. It is not decomposed by hydrochloric or dilute sulphuric acid; but by pure, concentrated, and fuming sulphuric acid, a yellow, or, when saturated, a brown-yellow liquid is produced. The smallest traces of nitrous or nitric acid color the solution in sulphuric acid, even when very small quantities of carbazol are used, intensely green. The same effect is produced by other oxidizing agents, such as Cl, Br, I, CrO_3, &c. Pharm. Centr. Halle, 1872, No. 52, p. 468.

GLUCOSIDES AND NEUTRAL PROXIMATE PRINCIPLES.

Amygdalin.—The action of various ferments other than emulsin upon amygdalin, has been the subject of extensive experiments by Mr. S. Heuschen of Upsala, who finds that when heated with the meal of peas or rye, amygdalin yields hydrocyanic acid, but not with finely sifted wheat flour. The presence or absence of amygdalin in a number of vegetable substances has been also determined by the author. To ascertain its presence, the vegetable material is finely powdered, and the acid which may be present in it is neutralized with chalk, as the author has, by experiment, proven that the organic as well as the mineral acids prevent the formation of HCy. Some coarse rye meal or similar ferment is then added, and then some water, after which the fermentation is allowed to proceed. The presence or absence of HCy is then determined by the use of paper which had been dipped into tincture of guaiacum, and in solution of sulphate of copper, carefully avoiding ammoniacal vapor. If the paper turns blue, the flask containing the HCy containing fluid is placed in warm water, and air is passed through its contents and a refrigerated glass tube, the U bend of which contains a few drops of weak alkali. The alkaline liquid is afterwards used for the production of Prussian blue and sulphocyanide of iron, in the well-known manner. By his method the author established:

1. That *sweet almonds* yielded HCy, and therefore contain a minute quantity of amygdalin; 10 grammes giving a faint, and 30 grammes a distinct reaction.

2. That the seeds, pericarp, leaves, branches, and buds of *Amygdalus nana*, Linn., yielded HCy; as did also the seeds of *Pyrus malus*, Linn.; of *Pyrus communis*, Linn.; of *Pyrus cydonia*, Linn.; of *Sorbus aucuparia*, Linn.; and of *Sorbus latifolia*, Linn.

3. As a rule the leaves, branches, or bark yielded no HCy.

4. Negative results were likewise obtained with the fruit of *Rosa tomentosa*, with the seeds of the lemon, melon, and with allspice. Amer. Journ. Pharm., 1872, p. 454, f. N. Jahrb. f. Pharm., 1872.

Æsculin is prepared by Mr. Robert F. Fairthorne as follows: A quarter of a pound of horsechestnut bark in moderately fine powder is moistened with half a pint of a mixture composed of 3 ounces of water of ammonia and 5 ounces of water. This is then packed into a glass percolator and percolated with 1½ pints of weak solution of ammonia. The first half pint is evaporated to a syrupy consistence spontaneously; the remaining portion is brought to the same condition by gentle heat; the mixed syrupy liquid is mixed with 1¼ ounces of pure alumina, allowed to dry, the dry mass powdered, boiled with 6 ounces of 95 per cent. alcohol, filtered while hot, and the residue upon the filter washed with 6 ounces more of hot alcohol. The filtrate, upon spontaneous evaporation, leaves crystalline æsculin, contaminated with dark-colored extractive. This is removed by mixing the mass with 2 ounces of cold water, agitating with a fluid ounce of ether in a vial, allowing to rest twenty-four hours, pouring upon a filter, and washing residue upon the filter with 2 drachms more of water. The nearly pure æsculin is rendered perfectly pure by drying, powdering, placing upon a filter, and washing it with half an ounce of benzole, followed by 1 ounce of ether. Average yield 16 grains. Æsculin seems to the naked eye an amorphous powder, but under the microscope proves to consist of minute needle-shaped crystals. It is soluble in alcohol, from which it crystallizes in beautiful, stellate tufts of transparent prisms; it is also soluble in acetic ether, strong acetic acid, solution of carbolic acid, solution of chloral hydrate, and alkaline solutions. When added to nitric acid it becomes yellow, and if ammonia is then added, a beautiful cherry-red solution is produced. Sulphuric acid, followed by ammonia, produces the same color. Amer. Journ. Pharm., 1872, p. 400, from Chem. News, 1872.

Digitalin, made by Nativelle's process, has been obtained by Prof. F. A. Flückiger from its manufacturer, Adrian, and has been examined by him with a view to verifying its properties and reactions as given by Nativelle. He found the principle to correspond in its reactions in the main with those given by its discoverer. To the naked eye it appears amor-

phous, but under the polarizing microscope it proves to be composed of double refractive crystals, which are in the form of microscopic tables instead of starry-grouped needles. The most important deviation from its reactions, as stated by Nativelle, Flückiger finds in its behavior to concentrated sulphuric acid, which, instead of producing a green color, changeable to a cherry-red when brought in contact with bromine vapor, produces a black-brown color, which is not changed by bromine to any extent, and is greened upon the addition of water. The handsomest reaction is found by Flückiger when a little digitalin is brought in contact with officinal phosphoric acid (?) which has previously been heated to its highest concentration and not allowed to cool off to any extent. The digitalin assumes a magnificent pure green color, while the acid becomes yellow. N. Jahrb. f. Pharm., March, 1873, p. 129.

Digitalin in the crystallized form, as prepared by the process of Nativelle, has been studied in its influence upon the human organism by G. Daremby and A. Mégerand, who found that under the influence of $\frac{1}{6}$ milligramme during three days, and $\frac{1}{3}$ milligramme during the following three days, the passage of urine increased 25 per cent., while the urea was reduced 30 per cent.; the pulse was reduced to 40, and the temperature of the body sank 2 degrees. On the sixth day vomiting occurred. Apoth. Zeit., 1872, No. 27.

Cantharidin has by Rennard been found in the aqueous distillate obtained from cantharides. He finds that water is capable of dissolving at the boiling-point 0.290 to 0.297 per cent.; when cold, 0.02 per cent.; boiling alcohol dissolves 2.03 to 2.168 per cent.; cold alcohol, 0.127 per cent.; boiling benzole, 3.38 per cent.; cold benzole, 0.51 per cent.; boiling muriatic acid, sp. gr. 1.17, 0.3 per cent.; cold muriatic acid, 0.137 per cent. The distillate also contained an oil of low boiling-point, the quantity of which decreases with the age of the flies. (See Cantharides, in this report.) Pharm. Centralhalle, 1872, No. 36.

Nataloin, discovered by Prof. Flückiger in Natal aloes, has

been further examined by Tilden, who finds that it differs from *aloin* and *barbadoin* in not forming chrysamic, but picric and oxalic acids, by the action of nitric acid. Melted with caustic potassa, nataloin yields paraoxybenzoic acid and beta-orcin; while Hlariwetz, by a similar treatment of *socotrin*, had obtained paraoxybenzoic acid and alpha-orcin.

Barbadoin, so named by Tilden to distinguish it from the nataloin of Flückiger, is prepared by boiling a brown, not too dark, quality of Barbadoes aloes with seven to eight times its weight of water, slightly acidulated with muriatic acid; allowing the liquid to stand twenty-four hours; decanting, evaporating to syrupy consistence, and allowing the syrup to stand a day or two, when a granular mass of crystals separates, from which the dark-brown mother liquor is separated by expression. The yield is from 20 to 25 per cent., in the form of yellow crystals. Barbadoin, when pulverized, added to 7 parts of fuming nitric acid and afterwards diluted with water, yields an abundance of *chrysamic acid*. The crystals are purified from oxalic acid, formed at the same time, by treatment with acetate of potassium, &c. N. Rep. f. Pharm., 1872, p. 417.

Sappanin.—By melting the commercial extract of sappan-wood (Cæsalpinia sappan) with hydrate of soda, by the process of Hlasiwetz for resins, J. Schreder obtained, besides an abundance of resorcin and pyrocatechin, a new compound, which he has named as above. In operating upon quantities 2 parts of the extract, 3 parts of commercial carbonate of sodium, and a little water are heated, until the frothing subsides, and a portion dissolved in water acidulated with sulphuric acid exhibits a wine-yellow color. The mass is then dissolved in water acidulated with sulphuric acid, the solution is filtered, extracted with ether, the ethereal solution distilled, and the syrupy residue allowed to crystallize during eight days. The crystals are drained by the assistance of a Bunsen's air-pump, are washed with cold water, and recrystallized several times, from boiling aqueous solution. To remove a slight red tinge, the author heats the crystals with zinc

and sulphuric acid, and thus, by recrystallizing, obtains brilliant white crystals, which, however, gradually acquire color again. Its chemical characteristics are not of a decided nature. It is neutral, forms but few compounds, is readily soluble in ether, alcohol, and boiling water, nearly insoluble in cold water, and insoluble in chloroform, bisulphide of carbon, and benzole. Its aqueous solution is turned dark cherry-red by perchloride of iron, and dark grass-green changing rapidly to brown by hypochlorite of soda, both colors being so intense as to permit the detection of minute traces. It possesses a feebly astringent taste, looses 14.17 per cent. of water at 212° F., melts when heated, and may be distilled in great part without change. Its composition = $C_{12}H_{10}O_4 + 2H_2O$ ($O = 16$). Ber. d. d. Chem. Ges., 1873, No. 12.

Koussin.—Dr. C. Bedall recommends the process of Pavesi for preparing koussin (or tæniin), which he finds to exist not only in the pollen, as supposed by Pavesi, but also in small proportion in the stalks and pedicles. Pavesi's process is analogous to the process by which santonin is obtained. Kousso is repeatedly treated with alcohol, to which milk of lime has been added, the residue is boiled with water, the different liquids are mixed, filtered, and distilled. The residue is treated with acetic acid, which separates the koussin in the form of a white flocculent precipitate. On standing, the precipitate becomes dense and resin-like, and by drying, is easily turned yellow, or at a higher temperature than ordinary, brown. The yield of kousso, free from stalks, is 3 per cent. The koussin possesses in quantities the odor of Russia leather, its taste is persistently bitter and acrid, it is crystalline in structure, sparingly soluble in water, but readily in alcohol, ether, and the alkalies. Composition = $C_{26}H_{22}O_5$. The author concludes that koussin is the only active principle of kousso, that it is preferable to other tænifuges on account of the comparatively small dose required; that in the proper doses it is reliable, and that as a rule it agrees well with the patient, producing only in exceptional cases nausea or vomiting. Am. Journ. Pharm., 1872, p. 394; from Viertelj. Schr. f. Pharm., 1872.

Indigo.—It is uncertain whether the presence of the other constituents of indigo, besides the blue coloring matter, does not render the estimation of the latter incorrect, or at least uncertain. J. Loewenthal believes that more correct results are obtained from estimating the ashes, which sometimes amount to 29 per cent., while an excellent indigo yielded only 4.5 per cent. Am. Journ. Pharm., 1872, p. 354; from Zeitschr. f. Anal. Chem., 1872.

Indigotin.—According to A. Méhu, indigotin, which is usually described in text-books as insoluble in water, alcohol, ether, the fixed and volatile oils, dilute acids, and dilute alkalies, is soluble in boiling strong alcohol, as also in methylic alcohol. A portion of crystals of indigotin may in all instances be obtained by the agency of these menstrua, but by the solvent agency of carbolic acid the author has obtained crystals which, under the microscope, exhibited remarkable perfection. The carbolic acid dissolves indigotin readily, and upon cooling, deposits the greater portion in the crystalline form. To prevent the solidification of the carbolic acid during the process of cooling, alcohol or camphor may be added, the latter in the proportion of one-fifteenth. Pharm. Centralhalle, 1872, No. 30.

Artificial Alizarin, as obtained by Messrs. Graebe and Liebermann from anthracene, is, according to Perkin, absolutely identical with the alizarin extracted from madder. They possess the same reactions, crystallize alike; when used as dyes give the same shades of color, their alkaline solutions give with the spectroscope the same bands, and when treated with nitric acid both produce phtalic acid. Rép. de Pharm., June, 1872.

Carminic Acid, the coloring matter of cochineal, forms, according to Er. Guignet, with lime in neutral or acid solutions, a black precipitate, which in thin layers appears greenish-black. This precipitate is always formed when a decoction of cochineal is added to a lime-salt, even to sulphate of calcium. To prepare the black

Carminate of Calcium, a decoction of cochineal, is treated with bicarbonate of calcium, when a precipitate forms, which being insoluble in water and in alcohol, is readily purified by washing with these liquids. When brought in contact with excess of lime-water, it becomes deep violet, while the lime-water itself assumes a violet color. It is completely soluble in acetic acid, forming a bright red solution, which upon evaporation leaves the black carminate. The action of lime salts upon decoction of cochineal is so characteristic, that the author thinks it might be used as a reagent for lime. Journ. de Pharm., Oct. 1872.

Luteic Acid, the coloring matter of the flowers of Euphorbia cyparissias, is prepared by Hoehn, by digesting the fresh flowers with alcohol, distilling off the solvent, and precipitating the residue with subacetate of lead. The precipitate is decomposed by sulphuretted hydrogen, and the solution evaporated to crystallization. The crystalline crusts are washed with ether to remove chlorophyll and a green resin, and then recrystallized from spirit of ether, and finally from diluted alcohol. The acid forms fine yellow needles, is inodorous, bitter, and astringent, fuses at 273° C. (= 523° F.) (?), and sublimes at 270° C. (= 497° F.) (?). It dissolves in 1000 parts of cold, and 3400 parts of boiling water, in 23.7 parts of cold absolute alcohol, and in 272 parts of ether. It reduces nitrate of silver and Fehling's solution, and does not yield glucose with acid. Am. Journ. Pharm., 1872, p. 490; from Journ. de Pharm. et de Chim., 1872.

Chlorophyll.—F. A. Harsten gives the following additional results of his investigation of chlorophyll. The general assumption that chlorophyll is readily destroyed by alkalies is contradicted; but acids possess this property to a very marked degree. For the purpose of its preparation in the pure state, it is necessary to remove the fat associated with it. This is best done by the action of alkalies, the exact method for which is the subject of investigation at present, the author being assisted by M. Bruylands. Among the preliminary results, the author finds that chlorophyll forms compounds

with the metallic oxides; that in its behavior it resembles the fatty acids, and that its compounds are as a rule greenish in color. From its solution in alcohol containing water, the author found that sulphate of barium, sulphate of lead, oxalate of calcium, chloride of silver, and hydrated oxide of lead precipitate it. The fact of its precipitation from such solution by hydrate of alumina, has already been determined by Frémy. The chlorophyll is in the plants always associated with a yellow substance, which the author has named

Chrysophyll, which is separated by first removing the water from the leaves by means of alcohol and expression: then treating them with spirit of ether by maceration for 24 hours. The ethereal liquid is pressed off, allowed to evaporate spontaneously until a moist residue remains, when they will deposit, along with chlorophyll, in the form of small, very handsome golden-yellow, glistening crystals. When treated with petroleum or boiling solution of potassa, the chlorophyll is dissolved, and the chrysophyll remaining may be purified by recrystallization from ether or boiling alcohol. Chrysophyll is insoluble in water; with difficulty soluble in petroleum, liquor potassa, liquor ammonia, dilute muriatic acid, and cold alcohol; freely soluble in ether, benzin, and fats. Owing to its extreme solubility in the latter, it is necessary not to evaporate the ethero-alcoholic solution obtained from the leaves too far, as otherwise the fat contained in the leaves will dissolve the crystals first deposited. A black substance,

Melanophyll, has also been obtained by the authòr, which possesses properties distinguishing it decidedly from the black substance obtained by Frémy. Chem. Cent. Bl., 1872, No. 33.

Cœrulignon.—This beautiful, blue, crystalline substance, first noticed by Lettenmeyer, as a by-product in the purification of crude pyroligneous acid on an industrial scale, has been the subject of further investigation by C. Liebermann. It is especially interesting because of its chemical relation to certain vegetable coloring matters. Owing to its insolubility in the common solvents, and its non-volatility, this blue product cannot be present in vinegar that has been once distilled,

and is therefore first formed, when the pyroligneous acid is treated with bichromate of potassium with a view to its purification, by the oxidation of a readily soluble, colorless, and—with acetic acid vapor—somewhat volatile body. This body may be reproduced from the cœrulignon by reduction agents, such as tin and hydrochloric acid, or better when heated with caustic alkali, and precipitated with hydrochloric acid. The colorless compound—*hydrocœrulignon*—contains C, H, and O only; crystallizes from its alcoholic solution in tables; may be distilled without decomposition, and congeals after distillation in the form of long crystals. With perchloride of iron—which is thereby reduced to protochloride—as also with a large number of oxidizing agents, it is converted into cœrulignon. The author has found all pyroligneous acids, from whatever source, to contain it, but finds it most abundant in the acids from beech and birch-wood. Pharm. Centralhalle, 1872, No. 50, p. 450.

ALBUMINOUS SUBSTANCES.

The discovery by Ritthausen of a new azotized acid, glutaminic acid, among the products of the decomposition of conglutin, induced Kreusler to endeavor to produce it from animal protein substances, but with negative results; and it seemed that the non-production of this peculiar acid would serve as a characteristic to distinguish animal from vegetable protein substances. Prof. Hlasiwetz and I. Habermann have since experimented with the same object, and prove very conclusively that glutaminic acid may be obtained from protein substances of animal origin (casein and albumen have been experimented with so far), as readily as from vegetable protein substances, if muriatic acid is substituted for sulphuric acid, and the reaction is allowed to go on long enough. The glutaminic acid is first produced in the form of a compound with muriatic acid, from which it is readily obtained by treatment with oxide of silver. Ber. d. Akad. d. Wiss. Wien., 1872, 17.

Albumen.—The non-appearance of coagulated albumen by

boiling the percolate obtained in exhausting licorice root which had been previously moistened and heated with a portion of the menstruum (see Compound Syrup of Licorice, in this report), induced Mr. R. Rother to ascribe this effect to the solvent action of starch upon albumen, both being normal constituents of the root. To verify his observation, the author united a mixture of 50 grains of pure starch in 1 fluid ounce of water with a solution of the albumen of 1 egg in 3 fluid ounces of water, and, subjecting them to prolonged boiling, found that no precipitation occurred, the liquid possessing only the opalescent appearance of starch, and yielding, upon filtration, a transparent filtrate. A drop of strong nitric acid added to the solution produced a dense coagulum of albumen, giving evidence of the fact that starch possesses the property of holding albumen in solution at a boiling temperature, and that strong acid only can separate it from such solution. Pharm. and Chem. Rec., Nov. 1872, p. 251.

In subsequent experiments the author has found that when a solution of albumen, to which *no starch* has been added, is boiled with brisk stirring, opalescence only occurs, the liquid filters readily, and the filtrate gives abundant evidence of albumen. Pharm. and Chem. Rec., May, 1873, p. 135.

Dr. Paul Liborius, rejecting the methods of Scherer, Berzelius, Haebler, Hoppe-Seyler, and Méhu, for the quantitative determination of albumen, for various reasons, chiefly incorrectness, suggests that in tannic acid we have a reagent with which the accuracy of albumen determination is possible, although the author does not seem to have developed an appropriate method perfectly. By titration with solution of tannic acid, albumen may be determined quantitatively with approximately perfect accuracy. N. Rep. f. Pharm., 1873, No. 3, p. 182; from Deutsch. Arch. f. Klin. Med.

Albumen is found adulterated, according to A. Herrburger, with gum, dextrin, flour, syrup, &c. To detect these adulterations he suggests that a small quantity be dissolved in cold or lukewarm water. After a short time the solution is stirred with a rod, when no little lumps should be evident, these

being coagulated albumen, of which well-dried albumen should contain minute quantities. The clear liquid is poured off, acidulated with acetic acid, which should produce no turbidity or precipitate, and alcohol is added. If a precipitate occurs, the indication is gum. If dextrin or a similar substance is present, it is evidenced by tincture of iodine. Sugar is determined by the well-known methods. Pharm. Cent. Hall., 1873, No. 18.

Dried Albumen.—Mr. Stanislas Martin proposes the following method to dry the albumen of eggs: Muslin trays are prepared, and the albumen is spread upon the muslin by means of a brush, is allowed to dry, and the process repeated until a coating of sufficient thickness is obtained. The drying is effected in airy rooms, sheltered from dust. The drying is also accelerated by exposing the frames, covered with a black unglazed material, to the sun. So dried albumen is readily removed from the muslin. Journ. d. Pharm. et Chim., Dec. 1872.

Blood Albumen.—E. Campe, who is extensively engaged in the manufacture of *dry albumen*, gives his experience in its manufacture in Wittstein's Vierteljahresschrift f. Pharm., Oct. 1872, p. 534–538. The blood should be collected as near as possible to the factory, as it is injured for the purpose of albumen separation by transportation. As soon as the blood has coagulated, it is cut into cubes, placed upon a sieve, and allowed to drain forty to forty-eight hours. The serum, which is of a light wine-yellow or deep golden-yellow color, is carefully decanted from blood-corpuscles and other impurities into tubs of soft wood, which are wider at the top than at the bottom, and are furnished 2 to 3 inches from the bottom with wooden faucets. If the so-called "natural albumen" is desired, oil of turpentine, in the proportion of a quarter of a pound for every hundredweight of serum, is thoroughly beaten with it for about an hour, and for this purpose a circular perforated board, of about one foot diameter and fastened to a rod, is best suited. The advantages of the use of oil of turpentine in this connection are: 1. That

during the beating it furnishes with the air, ozone, which bleaches the serum: 2. It has the tendency to preserve the serum; and 3, it clarifies it. The serum is after the beating allowed to stand twenty-four to thirty-six hours, when the oil of turpentine separates and floats upon the surface holding a greenish fat in solution. The clear serum is drawn off into shallow porcelain-lined iron vessels (which are previously coated with a little warm tallow to permit the ready removal of the dried albumen), which are exposed in a drying-room for two hours to a temperature of 42° to 44° R. (= 126° to 131° F.), during which the ventilation is stopped, and then allowing full ventilation, the temperature is allowed to sink to 30° to 40° R. (= 117° to 122° F.), and so to remain until the process is ended. If the so-called "patent albumen" is desired, the same process is pursued, with this difference, that to every hundredweight of serum a mixture of 6¾ drachms of sulphuric acid, 12½ ounces of acetic acid, specific gravity 1.040, and 6 pounds of water, is added in a small stream, thoroughly mixed, allowed to stand a short time, then one quarter pound of oil of turpentine is added, and after beating from one to one and a half hours, it is allowed to stand at rest as before, drawn off clear, and rendered feebly alkaline with ammonia. Albumen so prepared possesses a brighter appearance, and is preferred in the English markets. A second quality is obtained from the turbid portions of the serum, and a third quality by washing the residue upon the sieves with water, &c., &c.

Thirty-two hundredweight of blood yields 800 pounds of serum, which in its turn yields about 80 pounds of albumen.

Egg albumen is prepared in a similar manner, using acetic acid and oil of turpentine, and beating the mixture until the albumen becomes thin liquid. Shallow vessels of zinc, coated with olive oil, are used for drying, and they are usually deeper than for blood albumen, as thick pieces are in demand in Great Britain, where it is chiefly used. In order to thoroughly dry the thick cakes, formed by drying in the vessels, they are placed upon muslin trays, and allowed to

become air dry at ordinary temperature. Five and a half to 6 pounds of the white of egg yielded 1 pound of dry albumen. Vierteljahrschr. f. Pharm., Oct. 1872, p. 538.

Blood.—H. Struve has found that the coloring matter of blood is best precipitated in the following manner: To the liquid containing blood, a little ammonia or caustic potassa is added, then a solution of tannin, and finally acetic acid, until the reaction is distinctly acid. The dark-colored precipitate, tannate of hæmatin, subsides rapidly, is easily collected, washed, and dried, and yields, when treated with sal ammoniac and glacial acetic acid, the well-known hæmin crystals. Twenty cubic centimetres of urine, containing 0.023 per cent. of blood, yielded an abundant precipitate sufficient for many experiments for hæmin. Amer. Journ. Pharm., 1872, p. 354, from Zeitschr. f. Anal. Chem., 1872.

Blood.—The assertion of J. W. Gunning that old blood is rendered unfit for the production of the characteristic hæmin crystals, by the action of solution of iodide of potassium, is contradicted by Dr. Helwig, who, with hundreds of experiments to support his view, finds that there exists no solvent agent for blood that favors the production of these crystals more than does solution of iodide of potassium. Zeitschr. f. Anal. Chem., 1872, p. 244.

Hæmatin and Hæmatoidin.—H. Struve has succeeded to isolate two coloring matters from blood, one of which he identified as the hæmatin of Wittich; the other as the microscopic crystalline pigment hæmatoidin of R. Virchow, which, according to W. Preyer, has heretofore not been obtained from blood. The last-named chromogen separates in the form of dark blue-black microscopic crystals, which when dry and in quantities, remind of indigo. The crystals are insoluble in water, alcohol, ether, chloroform, and in acids, but dissolve with strong brown coloration in alkaline solution, even when such solution is very dilute. Its alkaline solution is not changed by boiling, and Hessler's test has no reaction upon it. Acids precipitate it from such solution, and if acetic acid has been employed for this purpose, the dark-brown pre-

cipitate formed, yields, upon the addition of chloride of ammonium, very handsome crystals of hæmin. If these crystals are boiled in acetic acid, with the addition of chloride of sodium or ammonium, a clear brown solution is formed, which when poured upon a watch-glass, deposits larger dark crystals, and the supernatant liquid becomes colorless. These crystals prove to be the purest crystals of hæmin, the perfect purification of which has hitherto been an unsolved problem. Zeitschr. f. Anal. Chem., 1872, No. 2, p. 150.

FERMENTS.

Ferments.—According to Dumas, solution of borax coagulates brewer's yeast and deprives it of its power to excite the vinous fermentation. It has a similar effect upon synaptase (emulsin) of almonds, depriving it of its property to react upon amygdalin; also upon myrosin, black mustard, treated with solution of borax, failing to give off the odor peculiar to the oil, or at all events giving off but a very faint odor; and finally, the action of diastase upon starch is completely prevented when solution of borax is added.

Petit's experiments, instituted to verify the results of Dumas, seem to disprove the above results, at least in so far as the destruction of the brewer's yeast is concerned. To a solution of 50 grammes cane sugar in a litre of water, sufficient brewer's yeast was added to induce, after a few minutes, regular fermentation. Borax added to the mixture had not the slightest effect upon the result of the fermentation, which continued as regular as before its addition. The addition of silicate of sodium retarded the fermentation somewhat in the beginning, but after it had commenced it continued rapidly and regular. The addition of sulphate of iron retarded it somewhat; sulphate of copper did not retard it in the beginning, but prevented the completion; arsenic acid also retarded it somewhat, as did also oxalic and acetic acids. But the only substance that really prevented or stopped the fermentive action was found to be corrosive sublimate, which, when added even in minute quantities to liquids undergoing

fermentation, causes it to cease almost instantaneously. Pharm. Centralhalle, 1872, No. 51, p. 459.

Fermentation Retarded by Quinia.—Prof. C. Binz has observed that when quinia is added to a solution of cane sugar, its conversion into grape sugar by the action of acids is retarded in a marked degree; the observation is true also of the conversion of starch into glucose by the action of acids. The author finds that neutral quinia, present to the amount of 1 per cent., has the power to retard the fermentive action of dilute acids, while the presence of chloride of potassium or sodium accelerates it. A neutral quiuia salt in non-acid solution seems to give off a portion of its acid, while the same salt in acid solution consumes a portion of the acid. The saccharizing power of saliva is not retarded by quinia, but the various processes of organic transposition occurring during putrefactive, alcoholic, lactic, and butyric fermentation are energetically retarded. N. Rep. f. Ph., 1872, No. 7, p. 408.

Alcoholic Fermentation.—C. Knapp states that when potassium salts are added to fermenting mixtures of sugar, yeast, and water, the fermentation is accelerated, if the addition is in small quantities, and is retarded when added in larger quantities. Sodium salts have, under the same conditions, less accelerating effect, and retard fermentation upon the addition of a quantity which, if a potassium salt had been employed instead, would have promoted fermentation. Ammonium salts exercise very feeble acceleration in comparison to the potassium salts. Those salts that possess an alkaline reaction retard fermentation until the free alkali is converted into carbonates. The author concludes that the salts of the alkalies, when accelerating fermentation, do not act so because of a nourishing effect upon the yeast cells, as might be inferred from Pasteur's views, but rather stimulate fermentation in a physiological sense. Pharm. Centralhalle, 1873, No. 5, p. 34.

Among the products of the alcoholic fermentation under the ordinary conditions of atmospheric pressure, Mr. H. T.

Brown found nitrogen, hydrogen, a carbohydride of the paraffin group, and occasionally nitric oxide. When the pressure was reduced, however, by 400 to 450 m.m., the relative quantity of hydrogen was much larger than under ordinary conditions, and the quantity of nitrogen much smaller. The latter is, however, only present if the fermenting liquid contains albuminoids, the presence of ammonia compounds not yielding such results. The author further observed that by the fermentation under reduced pressure acetic acid and aldehyde are formed in relatively large proportion, and that nitric oxide is only formed when nitrates are present. Ber. d. d. Ch. Ges., 1872, No. 10; Apoth. Zeit., 1872, No. 27.

Yeast-germs.—The experiments of Pasteur prove the germs of wine yeast to reside in the external integument of the grape berries. Washings from the uninjured berries exhibited, under the microscope, large quantities of minute organized bodies, and when introduced into clear, filtered grape-juice, incited perfect fermentation; while the same juice, to which none of the washings had been added, and another portion, to which a portion of juice, carefully obtained from the centre of the grape berry, had been added, remained unchanged. Pharm. Centralhalle, 1873, No. 6, p. 46.

Yeast.—Griessmayer has experimented upon the assimilation of ammonia by yeast, first noticed by Pasteur, but contradicted by Liebig. The experiments of the author support the views of Pasteur. Ch. Cent. Bl., 1872, No. 30.

Emulsin.—According to the experiments of S. Henschen, emulsin is not precipitated by acids, and when precipitated by alcohol, it does not lose its activity as a ferment. Amer. Journ. Pharm., 1872, p. 454, from N. Jahrb. f. Pharm., 1872.

Pepsin.—E. Scheffer draws attention to the remarkable effect which minute quantities of the carbonates of the alkaline earths exert upon pepsin as prepared by his method. Having once employed well-water, instead of distilled water, when preparing liquid pepsin from saccharated pepsin, he was astonished to find that the preparation failed to act upon

coagulated albumen. This caused him to repeat the experiment simultaneously with others for control, by which he determined that the same pepsin, swelled with well-water (containing carbonate of lime), or in distilled water which had been passed through carbonate of magnesia, as in the process for the aromatic waters, was so modified that it failed to act upon coagulated albumen entirely; while if pure distilled water, or well-water acidified with muriatic acid, was used to swell the pepsin, it retained its solvent power unimpaired. The author's experiments further prove that pepsin cannot exist along with ammonio-citrate of bismuth in solution, and he regards all preparations that are claimed to contain the two substances as absolutely devoid of pepsin. Experiments were made to unite pepsin in solution with bismuth, using freshly precipitated subnitrate, and, as solvents, glycerin. The results were negative, the bismuth compound precipitating the pepsin completely. Am. Journ. Pharm., 1872, p. 346.

Pepsin.—Beal proposes its preparation by simply scraping off the mucous membrane of cleaned hog's stomachs by means of a sponge (!), collecting the mucous matter so obtained, and drying upon glass plates at a temperature not exceeding 100° F.; 8 grammes (grains?) with 10 drops of hydrochloric acid, in 1 ounce of water dissolves 100 grammes (grains?) coagulated white of egg, within a period of twenty-four hours. Apoth. Zeit., 1872, p. 37.

(The process originally recommended by Boudault for preparing pepsin from sheep's stomachs, is essentially the same as that of Beal. The investigations of Scheffer show that the stability of pepsin is impaired by the presence of mucus, which, in a preparation made according to the above method, must always constitute a large percentage. In fact, the time required for the solution of the albumen indicates the presence in it of but minute proportions of real pepsin, as Scheffer has abundantly proven the remarkable strength of the pure preparation. The method proposed by Scheffer seems to be the most rational one yet proposed, and it yields, without a doubt,

pepsin preparations that leave little, if anything, to be desired.—C. L. D.)

By experiments with a digestive fluid—prepared by extracting the minced mucous membrane of the pig's stomach with glycerin—upon fibrin obtained from blood, Dr. V. Willich finds that the fibrin absorbs pepsin very energetically, when it is first macerated in a 2½ per cent. solution of muriatic acid; that the process of digestion commences with the formation of a feeble chemical combination between the pepsin and the acid, and that this compound is really the active substance. Digestion proceeds slowly at 40° F.; with the greatest rapidity and energy between 95° and 112° F.; while a higher temperature retards or altogether prevents it. For the digestion of a certain amount of fibrin, a definite quantity of both acid and pepsin is required. Am. Journ. Pharm., 1872, p. 520.

URINARY AND BILIARY SUBSTANCES.

Urinary Calculi of Cattle.—A veterinary surgeon at Pietra Santa, Italy, observed that the oxen in the neighborhood sometimes discharged calculi entirely different in appearance from those usually found in herbivores. They weighed from 2 to 15 grains; were of straw-yellow color; elongated shape, with rounded extremities. No sign of stratification was observable in their internal structure. Subjected to analysis they proved to be composed of *lithurate of magnesium.* They were observed principally from cattle, that worked hard, and fed upon young, flowering corn-stalks. Journ. de Pharm. et Chim., Jan. 1873.

Uric Acid.—According to Schwanert, uric acid, whether precipitated from its soda solution from the urine of healthy or of leucæmic persons, by muriatic acid, remains partly in solution, so that for every 100 c.c. of liquid 0.0048 gramme must be added to the weight of the precipitate. In this the author corroborates the researches of Zabelin. The author also finds that the method proposed by Solkowski, to precipitate first with muriatic acid, and after supersaturation with ammonia, by nitrate of silver, decomposing by sulphuretted

hydrogen, and precipitating by muriatic acid, may sometimes occasion loss of uric acid. Am. Journ. Pharm., 1872, p. 352, from Ber. d. d. Ch. Ges.

Cholesterin.—The well-known reaction of cholesterin with sulphuric acid is modified by E. Salkowski, by adding the sulphuric acid to its solution in chloroform. The solution retains the blood-red to purple color for days, while the sulphuric acid beneath exhibits a strong green fluorescence. The red solution is decolorized upon the addition of a minute quantity of water, while the green fluorescence of the acid is by glacial acetic acid changed to a violet or rose-red fluorescence, very similar to the result obtained in Pettenkofer's biliary acid test with glacial acetic acid. N. Rep. f. Pharm., 1873, No. 2, p. 120, from Medicin. Cent. Bl., 1872.

Biliary Acids.—Strassburg suggests a modification of Pettenkofer's test for biliary acids. A little cane sugar is added to the urine to be tested; with this liquid a piece of filtering-paper is moistened, and when dried, a drop of concentrated sulphuric acid is placed upon it, when, after one-fourth of a minute, the violet coloration is shown beautifully, particularly in transmitted light. Normal urine does not produce this coloration, which appears if only 0.00003 biliary acids are present. Am. Journ. Pharm., 1872, p. 354, from Zeitschr. f. An. Chem., 1872.

Choleverdin.—While experimenting upon the coloring matters of bile, with a view to their determination by the spectroscope, B. J. Stockois had his attention drawn to a new coloring substance, which he subsequently succeeded to obtain from bilirubin and biliverdin, and which he proposes to name as above. It is formed from either of these coloring substances by the action of ammonia and chloride of zinc, and also from bilirubin by the action of various oxidizing agents. The author has not yet obtained it in a perfectly pure state, but believes to be justified by his experiments to regard it a distinct body. It is soluble in alcohol, ether, chloroform, and amylic alcohol. Ber. d. d. Chem. Ges., 1872, No. 12.

V. NECROLOGY.

APPUN, F. C., a naturalist of eminence, died in July, 1872, in British-Guiana, where he was engaged in scientific investigation.

BAYLEY, E., a member of the Pharmaceutical Society of Great Britain since its commencement, died in London, in October, 1872.

BOHLER, JOHN, a prominent English herbalist, and an author of repute, died in Sheffield, in November, 1872, aged 75 years. The deceased was pre-eminently a self-made man.

BARNES, EDWIN, a member of the Pharmaceutical Society of Great Britain, died at Durham on the 1st day of March, 1873.

BROUGH, JOHN CARGILL, died at Esher, England, on the 7th day of September, 1872, aged 38 years. The deceased had been a prominent editor of pharmaceutical and chemical periodicals, and at the time of his death was librarian of the London Institution.

CONDER, GEORGE, a prominent pharmaceutical chemist, died at Hastings, England, in October, 1872, aged 29 years.

COLLIER, WILLIAM, a member of the Pharmaceutical Society of Great Britain since 1853, died at Sheffield, England, October 1st, 1872.

CASSELMANN, DR. CHRISTIAN CARL ARTHUR, editor of the "Pharmaceutische Zeitschrift für Russland," and an honorary member of this Association, died in St. Petersburg, Russia, on the 16th day of November, 1872, aged 44 years.

CARIUS, DR. L., a distinguished analyst, and Professor of Chemistry in the University of Marburg, died in December, 1872.

EISENLOHR, PROF. DR. WILHELM, an eminent physicist, died in July, 1872, at Karlsruhe, Germany, aged 74 years.

FRAZER, PROF. JOHN F., died in Philadelphia on the 12th day of October, aged 63 years. The deceased was a man of extensive learning and varied attainments, and had occu-

pied the Chair of Natural History and Chemistry in the University of Pennsylvania, for about 30 years.

FLETCHER, FRANCIS, a member of the Pharmaceutical Society of Great Britain since 1842, died at Cheltenham, Jan. 6th, 1873, aged 61 years.

GUILLEMETTE, ADOLPH GEORGES, a distinguished pharmacien of Paris, died in October, 1872, aged 64 years.

HOOKER, THOMAS ELLIS, a member of the Pharmaceutical Society of Great Britain since 1852, died at Sidecup, on the 28th day of September, 1872, aged 48 years.

HOPGOOD, R. C., a member of the Pharmaceutical Society of Great Britain, died at the Cape of Good Hope, on the 28th day of January, 1873, aged 30 years.

JONES, H. BENCE, a distinguished English chemist, and Secretary to the Royal Institution, died on the 20th day of April, 1873, after a long and severe illness.

LIEBIG, JUSTUS VON, died in Munich on the 18th day of April, aged 70 years. The immense service which this eminent chemist has rendered to science will doubtless be dwelt upon elsewhere in these Proceedings.

LUDWIG, PROF. DR. J. F. HERMANN, an honorary member of this Association, died at Jena, on the morning of January 7th, 1873, aged 54 years. The deceased was Director of the Pharmaceutical Institute of Jena, and editor of the "Archiv der Pharmacie."

MARRACK, PHILIP, a member of the Pharmaceutical Society of Great Britain, died at West Cowes, Isle of Wight, on the 30th day of August, 1872, aged 29 years.

MOSS, WILLIAM, died suddenly at Carlisle, England, on the 9th day of February, 1873, aged 53 years. Deceased was at the time of his death, Local Secretary of the Pharmaceutical Society, for Carlisle.

PARRISH, PROF. EDWARD, died on the 9th day of September, 1872, at Fort Sill, Indian Territory, aged 52 years. See Report of Executive Committee.

PAYNE, REUBEN CRAVEN, one of the founders of the Pharmaceutical Society of Great Britain, died at Bridgewater, England, on the 28th day of June, 1872, aged 64 years.

Russel, David, Ex-Vice-President of the British Pharmaceutical Conference, died on the 18th day of February, 1873.

Sturten, Richard, died at Peterborough, England, on the 29th day of September, 1872, aged 39 years. The deceased was, at the time of his death, Local Secretary of the Pharmaceutical Society of Great Britain for Peterborough.

Simpson, Thomas, one of the earliest members of the Pharmaceutical Society of Great Britain, died at Stowmarket, on the 6th day of January, 1873, aged 72 years.

Sedgwick, Adam, Professor of Geology in the University of Cambridge, England, died in his rooms in Trinity College, January, 1873, aged 79 years.

Schulze, Franz Ferdinand, Professor of Chemistry in the University of Rostock, died on the 14th day of April, 1873, aged 58 years.

Torrey, Dr. John, botanist, formerly Professor of Chemistry in the Military Academy at West Point, and since 1853, Chief Assayer in the United States Assay Office, died in New York, on the 2d day of March, 1873, aged 75 years.

Taylor, John, a member of the Pharmaceutical Society of Great Britain since its foundation, died at Preston, England, aged 68 years.

Weinlich, Dr. Christian Albert, formerly editor of the "Chemisches Centralblatt," died at Dresden, on the 19th day of January, 1873, aged 62 years.

Welwitsch, Frederick, M. D., F. L. S., &c., a well-known African botanist, died at Kensal Green, in October, 1872, aged 65 years.

Walker, Walter Tracy, a member of the Pharmaceutical Society of Great Britain, died at Croydon, England, September 16th, 1872.

Whitfield, John, one of the earliest members of the Pharmaceutical Society of Great Britain, died at Worcester, England, on the 23d of November, 1872, aged 45 years.

Waugh, George, a prominent member of the Pharmaceutical

Society of Great Britain, died on the 12th of January, 1873, aged 71 years.

Young, James Wallace, a chemist of great promise, a contributor to the Chemical News, &c., died at Porto Bello, on the 12th day of May, 1873, aged 30 years.

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REMARKS.*

Submitting this report, the chairman of your committee legitimates the assumption of the duties of his office, by referring to the prefatory notice of the Executive Committee, to the 20th volume of the Proceedings of this Association. Various uncontrollable causes have prevented him from commencing the report before January of this year, but he has endeavored to make his report as comprehensive as the material at his command permitted; and while he believes that the most important investigations of interest to pharmacy, that have been published from July 1st, 1872, to June 30th, 1873, are included in his report, the limited time at his disposal may have caused omissions and imperfections, which he is confident will meet with considerate judgment.

The classification adopted is essentially the same as that adopted by your chairman in his reports in 1867 and 1868, and differs mainly from the reports of the chairmen that have served since then, in the arrangement of organic chemistry, which they have endeavored to classify according to the latest views of chemical science. Your chairman submits that such arrangement, while perhaps desirable, is not essential to a report intended for pharmacists, the majority of whom, with more or less difficulty, keep pace with the radical changes advocated by one portion of the chemical profession, and accepted with reluctance, or even entirely rejected, by another. Moreover, the recent editions of standard works upon chemistry disagree in their classification to a greater or less extent, even when accepting the same general views; an additional reason for adhering to a classification, which seems, in the opinion of your chairman, to be the best suited to the pharmaceutist. By some trifling deviation from the previous classification, however, the order in which the individual sub-

* This portion of the report was not found among the papers of the Secretary, who had therefore to request another copy of it from the Reporter, but wishing to not delay the publication of the Proceedings, these remarks are introduced at the end of the report.—Editor.

stance follows each other, will be found nearly the same as that in which they occur in many of our standards of chemistry; the difference consisting mainly in the headings and subdivisions. Beginning with the hydrocarbons, these are followed by their allies, the volatile oils; these by the alcohols and their derivatives; which are followed by their allies, the fixed oils; and the lignins, starches, sugars, &c. Then follow the organic acids, the organic alkalies, the glucosides, and indifferent proximate organic principles, the coloring matters, the ferments, and finally, the urinary and biliary compounds.

The nomenclature is that of the Pharmacopœia of 1870. Chemical notation is always given as it is written by the author, but whenever the notation conforms with the new atomic theory, such notation is indicated by the affix (O = 16). The thermometric degrees are also given as they have been adopted by the author, but when they indicate degrees of the Centigrade or Réaumur scale, the corresponding degrees of the Fahrenheit scale are uniformly indicated in parenthesis.

The journals used in the compilation of the foregoing report are referred to by the following abbreviations:

Arch. Pharm. Archiv der Pharmacie. E. Reichardt, Halle a. Saale.

Am. Drug. Circ. The Druggist's Circular and Chemical Gazette. Dr. L. V. Newton, New York.

Am. Journ. Med. Sci. The American Journal of the Medical Sciences. Isaac Hays, M.D., Philadelphia.

Am. Jour. Ph. The American Journal of Pharmacy. J. M. Maisch, Phar.D. Philadelphia.

An. Chem. Ph. Annalen der Chemie und Pharmacie. F. Wöhler, J. Liebig, H. Kopp, &c., Leipzig and Heidelberg.

Apoth. Zeit. Apotheker Zeitung, Leipzig.

Ber. d. d. Ch. Gesel. Berichte der Deutschen Chemischen Gesellschaft zu Berlin.

Ber. d. Wien. Ak. Berichte der Kaiserlichen Akademie der Wissenschaften in Wien.

Bull. Societ. Royale. Bulletin de la Société Royale de Pharmacie, Bruxelles.

Can. Pharm. Jour. Canadian Pharmaceutical Journal. Edward B. Shuttleworth, Toronto.

Ch. Cent. Bl. Chemisches Central-Blatt. Dr. Rudolph Arndt, Leipzig.

Ch. News. The Chemical News. Wm. Crookes, F.R.S., London.

Chem. and Drug. The Chemist and Druggist, London.

Dent. Cosm. The Dental Cosmos. Dr. James W. White, Philadelphia.

Jour. App. Chem. Journal of Applied Chemistry, New York, Philadelphia, and Boston.

Jour. d Ph. et Chim. Journal de Pharmacie et de Chimie, Paris.

Jour. prakt. Chem. Journal für praktische Chemie. Hermann Kolbe, Leipzig.

L'Union Pharm. L'Union Pharmaceutique. Dorvault et Bouchardat, Paris.

Med. News. The Medical News and Library. H. C. Lea, Philadelphia.

N. Jahr. Ph. Neues Jahrbuch für Pharmacie und verwandte Fächer. Dr. F. Vorwerk, Speyer.

N. Rep. Ph. Neues Repertorium für Pharmacie. Dr. L. A. Buchner, München.

Pacif. M. and S. Jour. Pacific Medical and Surgical Journal. Henry Gibbons, M.D., San Francisco.

Pharm. Centr. Halle. Pharmaceutische Centralhalle für Deutschland. Dr. Hermann Hager, Fürstenberg.

Pharm. Journ. Trans. The Pharmaceutical Journal and Transactions, London.

Pharmacist (or Ph. Ch. Rec.). The Pharmacist (and Chemical Record). Albert E. Ebert, Chicago.

Pharm. Zeit. Pharmaceutische Zeitung. H. Mueller, Bunzlau.

Pharm. Zeit. Russ. Pharmaceutische Zeitschrift für Russland. Dr. Arthur Casselmann, St. Petersburg.

Polyt. Jour. Polytechnisches Journal. E. M. Dingler, Augsburg.

Rép. de. Pharm. Répertoire de Pharmacie. E. Lebaique, Paris.

Vierteljahrschr. Ph. Vierteljahresschrift für praktische Pharmacie. Dr. G. C. Wittstein, München.

Zeitschr. Anal. Ch. Zeitschrift für Analytische Chemie. Dr. C. R. Fresenius, Wiesbaden.

Zeitschr. Œst. Apoth. Ver. Zeitschrift des Allgemeinen Osterreichischen Apotheker-Vereins. F. Klinger, Wien.

C. Lewis Diehl.

REPORT OF THE COMMITTEE ON THE DRUG MARKET.

For the Fiscal Year ending June 30th, 1873.

For the past year drug business has been quite active, and as a general rule, with good results to those engaged in it. There have been no great fluctuations in prices, save on those articles upon which the reduction of import duty which took place in August last had the effect of modifying the price to a value lower than its preceding market price, the decrease

being about equal to the currency value of the duty removed. During the past six months, owing mainly to the stringency of the money market, and the apparent scarcity of ready money, there has been a tendency on the part of most purchasers to contract their orders to actual wants, and as a result, the wholesale trade find their orders more frequent in number, but less in value, thus necessitating greater labor and expense, and yielding a smaller ratio of profit.

The combination of leading financial speculators has had, with other causes, the effect to advance the comparative value of gold, though not to any very great extent, while some unfortunate disasters to moneyed corporations have had a tendency to retard generous investments, embarrass manufactures, and in some communities brought much financial trouble.

At the time the last report of this committee was presented to the Association the values of many commodities were fluctuating, as the new tariff law was about to take effect. It became operative on August 1st, and under this law nearly all crude drugs were admitted free of duty, and the chairman of this committee appended to his report a list of all changes which were to take place under this act of Congress.

During the latter part of June, 1873, a number of drugs became quite scarce, and their values advanced. This scarcity was due to the fact that importers were holding their goods in bond until the new law took effect, when the price of such articles at once receded. The values of many drugs depreciated in advance of the removal of the tariff, as dealers were anxious to realize upon stocks in hand, lest the large entries under the new rates would still further lessen their returns.

As crude articles are nearly all upon the "free list," while import duty is realized upon "manufactured products," it follows that the whole tenor of the law is to protect home interests upon those articles which are most extensively manufactured here.

The quality of imported drugs may be said to be satisfactory, though it is a fact patent to all of us, that no inspection of drugs can keep out all that is unfit for use. Great im-

provement has been made in this respect as compared with previous years, and not only a willingness but a desire is manifested on the part of the officials intrusted with this duty to require a strict adherence to the spirit of the law which regulates their department.

It is proper here to note that for the past two years no drugs, in powder, are allowed to be imported, where the fact of powdering makes it impossible to judge of the quality of the drug itself. By the kindness of Dr. W. S. Headley, Drug Examiner at the port of New York, I am able to embrace in this report the amount of drugs rejected at the custom-house of that city.

It has not been thought advisable to embrace a full table of the amount of imports, as has been done in some former years by those who have had charge of this report, as there is not only great difficulty to procure reliable statistics, but it also involves endless labor on the part of the chairman of the committee if he attempts it himself, or a large pecuniary outlay if he employs another to arrange it for him, while besides this the government have forbidden their employés to furnish such information. Advantage has been taken, however, of other sources of information, and an approximation to the true results has been obtained for a large number of drugs and chemicals received at this port, which the chairman of this committee believes will be of some value and interest to this Association.

During the past few years a new element in business has been introduced, which has had a demoralizing influence upon both the jobbing and retail drug trade; it is the system of buying through *drug brokers.*

This class of middle-men are frequently persons without proper business qualifications or knowledge, or any pecuniary interest at stake. They seek to induce the smaller dealers in out-of-town places to intrust purchases to their superior judgment, as they know the market better, can put their finger on the spot where the article can be procured at a good bargain, and similar excellent reasons why they can do better for the purchaser than if the purchaser should go in person. While they may be able at times to save the purchaser the

trouble of hunting up some stray goods, yet the practice is bringing about a deplorable state of affairs as far as procuring reliable medicines.

The broker has one object only in view, viz., *low price.* The house that will give the most favorable figures secures their patronage, and the result is that a class of goods not remarkable for their excellent quality, or their purity, have been introduced to meet the demands of "*brokers'*" orders.

Those dealers in our line of business who prefer to buy in this way can be assured that in most cases they fail to get reliable drugs. There are numerous instances within the knowledge of your committee, where drugs of no value as remedial agents have been sent out as first-class goods to reputable stores, the proprietors of which are anxious to purchase at "*bottom prices.*" Sometimes they get bottom prices, but more frequently miserable goods.

Your committee deem this a matter specially deserving their attention, and more so of many of the members of this Association, whose object is "to improve and regulate the drug market, to expose home adulteration, and to improve the science and art of pharmacy," and trust that their calling attention to this "deeply rooted evil," which has of late years grown about us, may be diminished to the true advantage of all interested in our calling.

During the year our land has been providentially free from any epidemic disease, yet we all remember the great inconvenience to which nearly every portion of our country has been at some portion of the year subjected, by the epidemic which affected horses, now familiarly known as the "epizootic." Its prevalence caused an appreciation of value in some articles used to alleviate the disease, most notably assafœtida and powdered elecampane root, both of which commanded for a time double their usual value.

The general range of American botanical remedies has remained, both as regards consumption and price, about the same as in former years. A few goods for which there is always a greater demand than supply, have as usual ranged much higher at the close of the year than at the commence-

ment. The general prospect for the coming season is for small crops and advanced prices. In the East and North, the weather has been so dry that the goods have not grown well, while in the south the excessively heavy rains have contributed to damage the crops there. Even so common an article as boneset seems to be in very small crop this year, and although many of the fresh herbs of this year are being gathered and prepared for market, our advices are that boneset, scullcap, motherwort, and lobelia will fail in amount as compared with the demands. A large amount of crushed root which has been sold in this city (New York) for American dandelion, is but the old fraud of chicory.

In Germany, there has been a great advance in the pay of laborers; there has been less attention paid this year to the collection of medicinal herbs, roots, &c., consequently a smaller quantity gathered, and we may anticipate increased prices during the year. In addition to this, the inclemency of the weather added to the causes for diminution in amount of these medicinal articles collected. It is believed that the increased pay awarded to herb collectors will, in the future, insure more careful attention to the gathering and curing of many of this class of medicinal remedies.

Notwithstanding the recent international troubles which have agitated some portions of Continental Europe, it has had but little effect upon the drug market, as the articles used in our business have been received nearly as freely as though no such troubles existed, and there has been but little fluctuation in prices. Now that all these difficulties have been amicably arranged, goods are flowing in so freely, that prices have a downward tendency for the future.

In concluding this portion of the report, your committee, not having the opportunity of consulting together, they have presented separate reports more especially relating to the drug market in their own cities, and it is hoped that it will not only be found of interest, but also of some practical value to the members of this Association.

Alcohol.—Alcohol during the year has maintained a nearly uniform price, in June, 1872, being $1.70 per gallon, advancing

in November to $1.84, receding in February to $1.76, and fluctuating between $1.70 and $1.77 to June 30, 1873.

During the past year there have been various parties who have offered alcohol below its real value, but they have doubtless manipulated it to meet the price paid for it. Upon inquiry whether "unpaid tax" spirit reaches this market, there appears to be very convincing evidence that *all* marketable spirit pays the tax imposed under the internal revenue law, and the officials have the workings of the law now so perfected, that there is but little opportunity to successfully evade the payment of the tax. There are doubtless a number of illicit distilleries where small quantities of spirituous liquors are produced (mainly for a beverage), yet these are few, and they are being gradually exterminated, so it may be said to have no effect upon the market, nor to defraud the government of any great amount of revenue.

The manufacture and rectification of alcohol are now almost if not entirely conducted in the grain-growing districts of the Western States. The cause of this is due to the fact that the government collects the tax at the still as the spirit is produced and put up for the market. To send the partly manufactured spirit to the Eastern States for rectification, as was the former custom, involves the payment of government tax on the spirit before it can be removed, and in rectification there is always a loss to the manufacturer, which loss would thus be very great, as the amount of tax paid on what becomes a loss is much greater than the cost of material itself. Besides this it necessitates a greater number of packages to carry the low proof spirit, and transportation charges are heavier than on the smaller number of packages required for the higher proof spirit.

The result of this has been to compel Eastern rectifiers to remove their stills, and attach them to the distilleries of the Western manufacturers. The law permits the product from the original distillation to be received in tanks which are under government lock and seal, and from this the spirit is pumped into the rectifying stills, where the process is completed. The tax is then paid upon the finished product, and

the rectifier avoids the loss of manufacture and payment of tax upon what would be represented by this loss.

As the tax is 70 cents per proof gallon, it follows that nearly or quite *three-fourths* of the price paid for alcohol is received by government as *tax*, and only one-fourth represents the amount of business upon which any profit is made.

Recently there has been a largely increased demand abroad for American alcohol. The fact that it is produced from cereals, while that of foreign production is from potatoes and other tubers, gives it an advantage, either real or fancied.

As the internal revenue law permits the manufacture of alcohol for exportation, under certain restrictions, and without payment of tax, a peculiar and distinct stamp designating such spirit, it can be furnished at a price which will enable it to compete with that of foreign manufacture. The result of this has been to create a large demand for foreign shipments, and contracts have been made for large quantities for this purpose. At present about 5000 barrels per month are being exported from this city, while our domestic wants do not usually require more than one-third of that amount. This diversion of alcohol abroad has, for the time, created a short supply for use here, and since the date when this report is supposed to close, the price has advanced to $1.90, and even $2 per gallon.

Citric Acid enters so largely into many of the popular pharmaceutical preparations, as also for domestic purposes, that the demand is constantly increasing, the importations of the past year being quite an advance upon that of the year preceding. The yield of lime-juice does not appear to have been as large as was anticipated, and these causes, as also the efforts of manufacturers, have kept the price of this chemical quite high. The price in England has fluctuated from 4s. a year ago, reaching 4s. 10d. in February, then declining, and now is held firmly at 4s. 6d. Here, it was held in July, 1872, at $1, gold, rose slowly until February last, when it reached $1.31, gold, and sympathizing with the English market, declined slowly, realizing in July $1.18, gold.

For many months one of the prominent manufacturers of chemicals here has been engaged in the production of this acid, and ere long it will be one of the staple products of their laboratory.

Tartaric Acid.—This is now almost exclusively a home product, the tariff discriminating to the disadvantage of foreign producers. The market has been fully supplied with an excellent article, but one single lot having been observed that was contaminated with sulphuric acid. The price has been steady at 55 cents during the year.

Lactic Acid.—This acid has been largely brought into use during the past four years, in preparing many of the new "elegant pharmaceuticals" which are now so popular.

It is derived almost exclusively from Germany, and it is satisfactory to note that the quality of it has improved, while the price has become more reasonable.

Carbolic Acid.—The good opinion which was formed as to the valuable qualities of this acid as a disinfectant continue, and it is, if possible, more popular than ever. New uses are being found for it, while, as a remedial agent, it has been proved a valuable addition to the physician. During the past year over 55,000 lbs. have been imported from Germany and England, besides the increasing manufactures here. Manufacturers abroad have, during the year, advanced their prices, and the advance is firmly held.

Oxalic Acid.—This has more interest to manufacturers than to druggists. The importation during the past year was nearly 350,000 lbs., and the price has steadily declined since the last report, it being then held at 34 cents, while now it can be freely purchased in large quantities at 23 cents. Much of that sold by dyers' brokers is a mixed article, and unreliable for many purposes.

Sulphuric Acid.—Sulphuric acid has sympathized with the advance abroad, owing to the great demand to produce fertilizers, and manufacturers advanced their prices early in 1873 from 1⅛ to 2⅛ cents, at which it is now firmly held.

Borax.—Borax has been received in such large quantities, from Nevada, Colorado, and California, that it has rapidly forced down the price from 30 to 20 cents. The low cost of production of the native article will soon preclude the importation of the foreign article. Boracic acid has been largely imported during the year, but this will doubtless be diminished in the future.

Bismuth.—Bismuth and its preparations have fluctuated but little in value during the year. A new source of this metal has been found in our own country, and should present experimental trials prove satisfactory, it is believed that this metal will be much more reasonable in price. The ammonio-citrate and the subcarbonate of bismuth appear to be displacing to some extent the use of the subnitrate.

Bromine.—Bromine and its compounds retain the favor they have enjoyed for several years past, and their use is increasing. The immense production of bromine in our own land has not only reduced the price throughout the world, but keeps it at a very moderate figure. There has been no change in value worthy of note.

Bromide of calcium, introduced about two years ago to notice, is now manufactured quite largely.

Chloral.—Chloral, though not now the panacea it was considered about three years ago, is still very extensively used, and has found a permanent place as a remedial agent. During the past year 30,320 pounds have been imported, chiefly from Germany. The quality has been generally acceptable, but a very small amount having shown decomposition or sophistication. In large quantities the foreign article can be purchased at $2 per pound, the decline being caused by overproduction, quite a contrast to 1869, when it commanded at one time $6 per ounce, and hardly to be procured at any price.

Chlorinated Lime.—Chlorinated lime, or bleaching powder, continues to be one of the largest imports into our land. During the past year the amount received in this port was 32,615,365 pounds, most of which was used for bleaching purposes. At the time of the previous report the market

value was 5 cents, being then on a decline from a previous higher price, which was caused by scarcity here. Since that time it has declined still further, and now commands but 3¼ cents.

Cream of Tartar.—Cream of tartar has fluctuated but little in price during the year. The supply of argols, both crude and partially refined, has been abundant, and much of the latter has been of such good quality that it was found to answer many of the purposes to which cream of tartar is adapted. The crude argols being free from duty, while cream of tartar pays 10 cents gold, gives the American manufacturer a margin for profit. As the refined argols had been entered at the custom-house simply as argols, and by this means evaded duty, a protest was entered by the manufacturers that it was an evasion of the law, and especially of a clause which states "that substances which are used as substitutes for articles which pay a duty, and whose similarity in character and appearance permit their use in such manner, shall pay the same duty as the article for which they are substituted."

Recently an order was issued by the custom-house authorities as follows: "Any article which is in fact and substantially cream of tartar, and is used for purposes for which cream of tartar is used, without further process of refinement, shall be classified as cream of tartar, whether known commercially by that designation or not."

Since this order the importers have paid duty under protest. It may be added that the argols under dispute contain 95 to 97 per cent. of bitartrate of potassa.

The importations of argols during the year were 6540 casks or 5,656,742 pounds, and of cream of tartar 2856 casks or 2,040,590 pounds. With this large amount of cream of tartar there would seem to be no need for adulteration, yet it is known to be the worst abused of all articles in this respect. The last sophistication that has been heard of is to mix tartaric acid with *corn starch.*

Iodine.—Iodine, at the close of the last report, was then commanding about $10.50 per pound. This was due in part

to the fact that it was then being largely used in a new anilin color. The color, though popular for a time, did not prove satisfactory, and it is not now so much in vogue. The price fell about the first of this year rapidly, reaching $6.50, then advancing to $7.50 in April, and in a few days later to $8.50, in May to $8.75, in June declined to $8.65, and remained at that point July 1st, with a downward tendency. It is doubtful whether iodine will ever see the low prices of ten years or more ago. It now costs double to collect the kelp that it did then, while labor, fuel, and other manufacturing expenses have been largely increased. The imports of iodine for the year were 23,726 pounds.

Iodide of Potassium.—Iodide of potassium followed the financial course of iodine, and kept at a corresponding price. The greater proportion of that consumed here is produced either in New York or Philadelphia, the French being in very little demand, while that of English make is not as much sought for as previous to 1870.

Mercury.—Owing to the political troubles in Spain, and the combination of the owners of the mines in Spain and California, the prices of this metal have advanced considerably during the year. The demand for manufacturing purposes increases, and the amount furnished from the mines is kept only to the limit of consumption, although it could be produced in almost unlimited quantities. It is well known that no amount of American mercury ever reaches the Atlantic States, the supply here being received from Spain. The price has advanced from 93 cents gold to $1.10 gold during the year, with a prospect of further advance. As a consequence all mercurial preparations have advanced, and calomel is now $1.35, corrosive sublimate $1.24, mercurial ointment, U. S. P., 90 cents.

Magnesia.—The bulk of the magnesia sold here, both calcined and carbonate, is from the well-known manufactories of Jennings or Pattinson, but little being made here. There has been a temporary scarcity of the carbonate made by Jennings, and his agents here have not been able to meet the demand. There has been no change of values.

Morphia.—The course of this important chemical has depended upon the fluctuations of opium. In July, 1872, the manufacturers' price was $5.10, advancing slowly through the year to $5.20, $5.75, declining in October to $5.45, November $5.70, January $5.50, February $5.20, closing in June at $5.70. Later, however, it continued to advance, and no contracts are made at less than $5.75, while the jobbing rates are over $6.

The enormous use of this substance as a stimulant seems to be continually on the increase, and it is a question which should be seriously considered by the dispenser, whether he should not decline its sale to persons who use it only as a stimulant or intoxicant. Statistics of its manufacture would be desirable, but like all similar home manufactures, they are extremely difficult to obtain.

Bichromate of Potassa, though used mostly in the arts, is handled so largely by the druggist that it deserves mention; though now largely manufactured here, yet the imports for the year are over 924,000 pounds. The price has fluctuated but little during the year, and is now held at twenty-four cents, an advance of about two cents since the previous report.

Chlorate of Potassa is exclusively a foreign product, as there is not a sufficient margin to induce home competition. In October it advanced to fifty-eight cents, but the supply becoming more full it soon receded, and in June could be purchased at forty-two cents. The imports for the year were 600,000 pounds.

Rochelle Salts have, during the past two years, come more largely into use in place of epsom salts, and this season to such an extent that the manufacturers have been unable to execute their orders, and the jobbers have been obliged, in many cases, to reduce the orders of their customers, and at times to omit it altogether. As cooler weather approaches its crystallization can be effected more readily, and during the coming season all the manufacturers will increase their apparatus for its production. There was no advance in price at first hands.

Sulphate of Quinia.—This chemical, now so important a remedy, as well as an article of commerce, has, during the year, maintained the price at which it was quoted at the last report. During the months of August and September the demand for quinia caused the price to temporarily advance to $3.25, but it soon again declined to $2.60, which figure it remained until in May, when it again advanced to $2.85, but soon declined to $2.70, which was the closing rate at the end of June.

A large quantity of muriate of cinchonia has been disseminated throughout some of the Southern States under the guise of French quinia of Pelletier's brand, and your committee have heard of some instances in which members of this association have been inveigled into its purchase. The tests are so readily applied that there need be no trouble in detecting it.

The imports of sulphate of quinia for the year was 15,000 ounces. In this connection may be mentioned the variable quality of citrate of iron and quinia. The chairman of this committee, having had occasion to examine various samples found in the market, has, in a brief paper in the March number of the Druggists' Circular, recorded the results obtained, which were $4\frac{2}{10}$, $7\frac{7}{10}$, $8\frac{2}{10}$, 10, 10, $11\frac{3}{10}$ per cent. of hydrated quinia, while two of the specimens contained cinchonia.

Soda.—The imports of the past year amount to 96,708,-838 pounds of sal soda, 25,352,432 pounds of caustic soda, 21,608,164 pounds of bicarbonate, 9,414,071 pounds, and of hyposulphite of soda, 509,038 pounds.

During the year there has been slight fluctuations in price of carbonate and bicarbonate, owing to irregularity of supply from England.

The manufacture of soda and aluminous products from cryolite in the western part of Pennsylvania continues to increase, and they command the favorable consideration of purchasers. Their freedom from many of the contaminations which occur in the foreign article make their use very desirable.

Sulphur.—Sulphur advanced in price about a half cent

during the early part of the year, but again declined to its former value. The importations for the year were 90,075,-842 pounds.

Arrowroot.—Bermuda arrowroot has been in very moderate supply and at advanced figures, forty-five cents being the market value (jobbing cost) for prime quality. The amount of this variety of arrowroot imported is annually declining, as the amount of care and labor bestowed upon its cultivation and preparation is not remunerated by a market value less than is now received by the producers, while at a lower figure they can more profitably cultivate market produce for exportation. Many of the former producers of arrowroot in Bermuda have abandoned it for the purpose just alluded to. Another cause which has operated to their injury is that lower grades of arrowroot have been exported to Bermuda, and after a short stay there repacked and exported as the genuine article. These lower grades have a value of from eight to twenty cents, and are not regarded as equal in flavor or quality to the Bermuda variety. This may account for some of the poor samples of so-called Bermuda arrowroot, offered at less than the usual price of true Bermuda. The producers in Bermuda feel indignant at the fraud thus perpetrated at their expense, and an effort has been made to prevent by legislation the admission of arrowroot to that island. The imports of arrowroot for the year are 1224 packages, amounting to 85,566 pounds, of which only about 120 packages, equivalent to 14,000 pounds, were of the genuine Bermuda variety.

Balsams.—Canada balsam has been very scarce and high, opening in June at $4.00 per gallon, advancing until April, when it reached $6.00, and early in June $7.00, receding about July 1st to $5.75. Oregon balsam has sold at $3.50 to $4.00, but does not meet with a ready demand.

Balsam copaiva, upon the removal of duty, declined from 79 to 52 cents in August, since which time it has gradually advanced, reaching 70 cents recently, with a disposition to advance still further. It is asserted that some parties in this city have "improved" it by adding castor oil, but of this your

committee are unable to report any facts. The excellent test suggested by Prof. E. S. Wayne (petroleum benzin) is easily applied, and should this adulterant be present, it will at once be detected. The amount imported for the year is 86,794 pounds.

Balsam Peru has been in ample supply, the amount imported being 6,772 pounds, with a good previous supply on hand from last year. With the abolition of import duty the price fell from $3.25 to $2.50, and now is worth still less in original packages.

Balsam Tolu declined from 84 cents in June to 52 cents in August, but has recently advanced and will probably be still higher in price. But little hard balsam Tolu is now to be found. 10,765 pounds were imported during the year.

Beans.—Calabar beans have become quite a regular article of import, it being chiefly used in the manufacture of extract. Their value has declined considerably, and are now worth in large lots at first hands about 40 cents.

Tonka Beans.—The Angostura variety have held remarkably high prices during the year, varying from $1.25 to $1.10, but as the coming crop is reported unusually productive, prices are weakening and a considerable decline is anticipated. The imports for the year were 49,047 pounds.

Vanilla Beans have continued high during the year, notwithstanding the reduction of duty, as the crop last year was not abundant, and the price in France was still higher than here. The crop this year was plentiful, but it is stated that owing to the unfavorable weather during the curing season, that fully one-half of the product will become unmarketable, owing to its moulding. Prices have ranged from $19 to $27, in quantity, the variation being due to the length and quality of the bean. The imports of the year were 14,500 pounds.

Berries.—Cubeb berries have been abundant in supply and moderate in quality, having a larger share of stalk than desirable. Much of the powder in market is of very poor quality.

Juniper Berries have been abundant in quantity and of good quality, and price quite uniform at $3\frac{1}{2}$ cents; 234,422 pounds were imported during the year.

Barks.—Cundurango.—This, at one time, highly praised panacea has fallen in the estimation of all, and where it was formerly bought eagerly at $100 per pound, it is now so abundant that it is almost cheap enough to use for kindling wood. Sales have been made during the past year as low as 10 cents per pound. Verily it is, "a drug."

Elm Bark is being consumed more largely than ever, but the amount of select bark is decreasing in quantity. During the spring, there being but a very light stock on hand, it advanced to 40 cents, and continued at that price until the new crop was received in June, by which time the stock on hand was almost exhausted.

In collecting this bark, the tree is destroyed, and as the wood is of no commercial value whatever, no effort is made to cultivate it or replace the loss. As fast as elm bark is gathered in any locality, it follows that there is so much material out of the market, and thus the supply is being diminished year by year, and the demand being constantly increasing, it is to be expected that the value of this commodity must appreciate in the future. While it was formerly obtained in large quantities in New York and the Eastern States, the collectors of it have "gone west" to find their supplies. While it is impossible to obtain reliable figures as to the amount collected, yet it appears to be a fact, that there has been less gathered this year than last, and doubtless as the season advances, prices will advance materially. Attention is called to the fact, that much of the flour of elm or powdered elm, is adulterated with starchy matter, probably *flour.*

Sassafras Bark for several years has been at such a low price, that there was no inducement to gather it for market, and its collection has been neglected. During the year, there arose an unusual demand for it, which was followed by an advance to 20 and 25 cents during last fall and spring, but

prices declined to nearly the old figures upon the arrival of the new supply. Wild cherry bark has been in plentiful supply of good quality, and at unchanged prices.

Bay Rum has been imported more freely during the past year, though no reliable figures as to amount received can be obtained. Much of that destined for this port arrives in small vessels at ports in the Eastern States, and is reshipped in bond to this city. Small packages of it frequently are smuggled, while the oil of bay is rarely ever entered regularly through the custom-house. Nearly all this oil sold is represented to be from "government sales," *i. e.*, confiscated by government officials in attempting to pass without paying the tax of importation, and then sold by the custom-house authorities. It is needless to add that it never brings a value equal to the import tax laid upon it by the act of Congress. So much of the bay rum in the market is made from the oil of bay, that it has caused the imported article to be less in demand owing to the lower price of the domestic article. Another trouble which pertains to this special article, is the peculiar ruling of the internal revenue officials, compelling the "stamping" of every package, however small, regardless that it has paid custom-house import duties in gold, then stamps on the original cask, and again stamps to the full value of every intermediate package until it reaches the consumer. It is to be hoped that we shall have the pleasure before another report is made from this committee to record the annulment or amendment of such portions of the "internal revenue" law as act with unnecessary harshness and severity upon our profession.

The quality of the imported article is hardly as fine as that received a few years ago, while some packages received have hardly been salable.

Gum Arabic has been in full supply in all its grades, and without any fluctuations or items of importance to notice.

Assafœtida has been the subject of more fluctuation than any other article. In the early part of last fall, an epidemic (now familiarly known to us all as the "epizootic") broke out

in this city among the horses, spreading rapidly in every direction, until it appears to have traversed every part of our Union, and during its continuance putting an almost complete embargo upon all transportation which depended upon these animals. Assafœtida was very largely in demand for this trouble, and owing to there being but a moderate supply in our city, the price rose rapidly from 40 cents, and was sold as high as $2.00, but a shipment by steamer from England arriving, the price declined to 65 cents, while now it has receded to 42 cents. During the time when the demand was so great, several cases were allowed to pass the custom-house without special examination, and it was found subsequently that they were almost worthless owing to the unusual large quantity of *stone* present. The rest of the importations have been of good quality, and a few cases of very fine have been noticed.

Camphor, at the time of the previous report of this committee, was held at 71 cents. In consequence of the free admission of crude camphor, and the light duty of 5 cents per pound on refined camphor under the last tariff law, the price of camphor declined, and in August sold at 55 cents, in September, at 38; in December, at 33 cents, and kept at that price until the month of June, when owing to the unexpected arrival of large cargoes of crude from Japan, the price again declined, and 29 cents was the ruling price. Much of the crude article is of excellent quality, and the loss in refining from extraneous matters is but trifling. English camphor in rings is now out of the market.

Benzoin has been in good supply and of excellent quality, without any change in value.

Shellac has until recently maintained a very uniform price, but now is firmly held at an advance of from eight to ten cents.

Lycopodium has been in moderate supply, and the prices have receded from the figures of last year.

Lupulin has been offered freely, but much of it has been of

poor quality, lacking odor, and evidently obtained from old or inferior hops. While recent hops have been held at prices approximating forty to forty-five cents, many lots of old hops have been sold at one-fourth of that price.

Mace, at the close of June, 1873, had an upward tendency, owing to reported prospect of its being less abundant than last year, and in July advanced; nutmegs of course appreciated in value slightly.

Manna of all grades has been in large supply, and prices have receded from quotations of last year.

Opium in June, 1872, was held at $5.85 in this market, but shortly afterward advanced to $7.00, in November to $7.90, declined in March to $7.00, in April and May it advanced to $8.00, and at the writing of this report it holds at the latter figure. It is a well-known fact, that this drug is the subject of *speculation* to a greater extent than perhaps any other, and those who deal in it by wholesale quantities know, that scarcely any reports which are circulated through the trade, as "special messages by cable," are reliable, as any report can be obtained, which may be used to influence the market. During the latter half of 1872 prices declined, owing to the very large yield of the crop, which amounted to about 6500 baskets. Since January, the market has shown an advance, which has been very steadily maintained, and the prospect does not indicate a decline during the present year, owing to the fact that the crop which will be gathered this season is a large deficit as compared with that of 1872.

The annual average product for the past four years, including the estimated crop now about to be gathered, is nearly 4000 baskets; the extremes being that of 1872, 6500 baskets; 1873, 3000 baskets. The amount left on hand from last year will doubtless be sufficient to meet all demands, though it is likely that before another year's crop can be made available that prices will advance.

The quality of the opium compares favorably with that of previous years. During the year, one lot of forty cases was

rejected at the custom-house of this city, as it contained less than 6 per cent. of morphia.

Oils.—*Oil of Bitter Almond* has depreciated from a year ago, owing mainly to the removal of tariff duty, having declined from $11 to $9.50 per pound.

Expressed Oil of Almond has declined but little in value.

Oil of Bay is subject to a duty of $17.50 gold, per pound, yet it can always be procured at about $12 or $13 currency, per pound.

Castor Oil has been quiet, but commands a higher price, and is steady at 20 and 21 cents, in cases. East India oil less in demand than ever.

Cod Liver Oil has advanced in price, owing to a different construction of the tariff law, and a consequent increase of duties.

Oil of Lemon has been in good supply, and the production of the past year was an increase on the preceding. Some very poor lots of oil have been offered at low prices through brokers, and as usual with cheap goods, have found their customers. Some new brands have found acceptance, and the supremacy of a name which has for many years held a high reputation is now giving way.

Olive Oil.—The variety known as Marseilles oil in bottles has at times, during the past year, been quite scarce, as the importers failed to keep it in full stock, owing to the fact that competition in that brand had removed all profit to them. The fact that we possess no ready and easy test applicable to commercial use, prevents dealers detecting adulterated olive oil, and we know that much of that sold is innocent of the olive.

Oil of Peppermint has been in full supply, and quite exempt from speculative action, maintaining a very uniform value, and plenty to be had of excellent quality, though numerous lots of tainted and tampered oil have been offered.

Oil of Sandalwood seems to be in active demand. Much of

the oil in market is deficient in quality and odor, and it is doubtless sophisticated to a great extent.

Oil of Sassafras has been abundant, and at a very reasonable price, declining during the past year in value. Baltimore is the chief market for this oil, but we have not been able to procure any definite information as to amount produced during the past season.

Oil of Wintergreen has recently advanced in price, owing to the fact that the unfavorable season largely reduced the anticipated products. It now commands nearly a dollar more than a year ago, with every prospect of an advance.

Aconite Root.—The English root has quite disappeared from the market, but one single lot, and that a very small one, being known of. The root is now received exclusively from *Germany*, and in quality is not entirely satisfactory. The excellent paper of Dr. Squibb on aconite last year, gives the only available test for commercial purposes, and by this method the writer would judge that much of the root in market at present is deficient in medicinal qualities.

Ginseng Root has continued at high rates during the year.

Ipecac.—The supply has been abundant, quality good, and no change in value.

Pareira.—Recent investigations of Dr. Hanbury prove that the source from which this valuable drug was supposed to be derived is erroneous, and it is now ascertained that the true botanical source is the *Chondodendron tomentosum.* There is now no difficulty in procuring a good supply of the genuine root at 70 cents.

Rhubarb.—The importation of this root is on the increase, and as the so-called Russian variety is now obsolete, and the drug law excludes Rhapontic rhubarb, we now receive only the Chinese root. This has been so fully reported upon each year by Dr. Squibb, and will be again this year, that but little can be added to the information he will communicate.

Senega Root has been scarce, high in price, and poor in quality, and a large demand from abroad. Much that has

been offered in this city had a portion of the stems attached, and more of the native soil adhering to the roots than consumers desire, and though quite unfit for use without a great waste in garbling, was yet sold at 90 cents, prime root being at the time $1.05.

Virginia Snakeroot has been largely supplanted by the Texan or Red River variety, which is much less fragrant, and is by some considered inferior in medicinal effect. The supply for the year has been below the average, in both quality and quantity.

Drugs rejected at the Custom-House, New York, during the year ending June 30th, 1873.

Bark, Mezereon,	1 bale,	Mouldy.
Gum, Guaiac,	25 barrels,	Unfit for medicinal use.
" Kino,	1 case,	Damaged by water.
" Opium,	40 cases,	Deficient in morph. strength.
Herb, Serpyllum,	1 bale,	Mouldy.
" Violet,	1 "	"
Flowers, Elder,	1 "	"
Leaves, Buchu,	1 "	Damaged by water.
" Belladonna,	11 bales,	Unfit for medicinal use.
" Carduus,	1 bale,	" "
" Conium,	5 bales,	" "
" Hyoscyamus,	7 "	" "
" Savin,	1 bale,	" "
" Senna,	3 bales,	Damaged by water.
Roots, Calamus,	1 barrel,	Unfit for medicinal use.
" Colchicum,	1 bale,	" "
" Hellebore,	1 "	" "
" Rhubarb, *Rhapontic*,	5 cases,	Not admissible by law.
" " Powdered,	1 case,	" "
" Squills,	24 bales,	Unfit for medicinal use.
" Taraxacum,	6 "	" "

The following list of drugs and chemicals received through the custom-house at New York, is selected as likely to be of interest to the members of the Association:

Articles.	No. of Packages.	Pounds.
Acid, Boracic,	990	1,048,151
" Benzoic,	238	2,000
" Oxalic,	442	385,512

Articles.	No. of Packages.	Pounds.
Acid, Carbolic,	1,022	55,123
Aloes (all varieties),	487	114,846
Antimony,	201	93,840
Argols,	6,540	5,656,742
Arsenic,	1,515	522,119
Ammonia, Carbonate,	1,027	550,049
Arrowroot,	1,224	85,566
Balsam Peru,	50	6,772
" Tolu,	336	10,765
Beans, Tonka,	144	49,047
" Vanilla,	195	14,449
Baryta, Sulphate,	6,181	3,921,491
Berries, Juniper,	2,444	284,422
Borax,	50	6,594
Chloral,	289	30,820
Copaiba,	604	86,794
Cream of Tartar,	2,856	2,040,590
Cudbear,	828	187,019
Ergot,		4,688
Flowers, Chamomile (Roman and Belgian),	317	31,131
Gum Arabic,	5,136	2,074,426
" Opium,	919	137,538
" Camphor,	11,552	551,107
" Tragacanth,	481	99,431
Glycerin,	2,892	818,193
Iodine,	135	28,726
Insect Powder,	837	69,099
Isinglass,	461	46,545
Leaves, Belladonna,	83	11,661
" Buchu,	815	54,685
" Digitalis,	18	1,960
" Senna,	141	14,064
" Uva Ursi,	45	9,971
Lime, Chlorinated (Bleaching Powder),	42,477	32,615,865
Manna,	121	16,228
Nux Vomica,	2,750	146,223
Oil, Almonds (Expressed),	120	22,036
" Castor,	562	(gallons) 11,910
" Cod-liver,	191	" 7,929
" Olive,	18,816	" 139,962
" Citronella,	567	pounds 1,115
" Lemon,	2,121	52,830
" Orange,	322	7,506
" Rose,	11	188
" Sandalwood,	42	3,156
Potassa, Bichromate,	1,280	924,387
" Chlorate,	38,068	599,996

Articles.	No. of Packages.	Pounds.
Potassa, Prussiate,	301	129,112
Phosphorus,	535	88,210
Roots, Colombo,	198	20,105
" Ipecacuanha,	96	9,482
" Rhubarb,	461	47,889
Soda Ash,	61,939	96,708,838
" Carbonate,	276,712	25,852 482
" Bicarbonate,	76,923	9,414,071
" Caustic,	84,845	21,608,164
" Hyposulphite,	1,004	509,038
Sago,	1,065	182,800
Saffron,	35	2,218
Safflower,	458	108,156
Seed, Caraway,	1,200	128,596
" Fennel,	224	47,356
Sulphur,		90,075,842

P. W. Bedford,
Chairman of Committee on Drug Market.

REPORT OF WILLIAM H. BRILL, OF PITTSBURG.

Our cities being inland, we have few direct importations of drugs or chemicals to report, our stock being supplied almost exclusively from the Eastern markets; some indigenous articles, such as ginseng, calamus, ergot, and beeswax, are offered, but the price is governed altogether by the New York price-currents. The manufacture of carbonate and bicarbonate of soda, lye, acids, &c., is carried on quite extensively, and our Natrona brand of bicarbonate equals the best imported. We also have a new enterprise, under the title of the Pittsburg Tar and Chemical Works, which promises fair to become one of our leading institutions; their productions as yet are limited, but the company being composed of solid men, with a good chemist at its head, we trust it will soon make itself felt in the American chemical market. Carbolic acid in its various forms, carbolate of lime, and coal-tar varnish, are their principal productions.

White lead is largely manufactured here, having eight large corroding establishments, which turn out no less than four thousand tons of pure carbonate, ground in oil, besides large quantities of lower grades, amounting to 8000 tons; blue lead colors, &c. The price of pig-lead has fluctuated con-

siderably, and with it the manufactured article, ranging from 10½ to 11½ cents per pound, in five-ton lots. The reputation of our Pittsburg lead is such, that it is shipped to all parts of the country, and bids fair to rival in quality and quantity any city in the Union.

Petroleum, or *Seneca oil*, another production of our State, has proven one of the most valuable illuminators and lubricators in the world, and Pittsburg claims the credit of making it practically valuable, in 1845, for lubricating purposes; it was also bottled here as a panacea for rheumatic pains, and had an extended sale under the title of Rock Oil, and proved a good emollient. Its use for illuminating purposes began in 1850, and resulted from experiments to utilize the oil, which came up with the water, and proved troublesome in working the salt-wells at Tarentum. Under the name of Carbon Oil, its use soon became sufficient to require all the oil from the salt-wells and surface-springs to supply the demand; yet it had no extended commercial importance until 1858, when the Pennsylvania Rock Oil Company organized and sunk a well near Titusville, producing some eight barrels per day. This was the commencement of an era of unbounded excitement and speculation. Numerous wells were sunk throughout the oil regions, and notwithstanding many failures the production of oil was enormous, some of the wells spouting out hundreds of barrels daily, and has developed into an industry of national importance, not only as an article of home consumption, but of export to foreign countries. The total products of the Pennsylvania oil regions in 1870 were 5,659,000 barrels, of which 3,279,951 barrels were exported. During 1872 the production was much larger, but exact figures could not be obtained; yet Pittsburg alone received 1,186,501 barrels, and exported 743,610 barrels, besides thousands of barrels of benzin and naphtha. For the past few years, owing principally to the completion of the many lines of railway into the oil territories, the traffic in crude as well as refined oils has been somewhat diverted; yet we look back with pride to the time when the Pittsburg petroleum market was the topic of conversation all over the

United States, and we might say, "civilized world;" when our wharves were covered with millions of gallons of the oily treasure, and millions of dollars were lost and won in stocks, corners, and rings; when the financial pulse of the whole nation was made to throb by the daring enterprises and speculations of our oil princes; even the State government trembled when the tremendous schemes of our Southern Improvement Company were divulged, "equalled only by Credit Mobilier," and liberal charters were ever after dreaded by the Solons at Harrisburg. Paraffin, one of its products, was largely manufactured here some time since, but at present the works are stopped. The article produced is a handsome, white, solid wax, and differs somewhat in chemical constitution from that obtained from cannel coal or tar, having both a lower boiling-point and lower specific gravity.

Coal, *iron*, and *glass* do not properly come under the head of chemicals; yet the process, both in nature and in our immense crucibles "or furnaces," is purely chemical, and your committee must be excused for mentioning Pittsburg's greatest interests, the foundation of all her wealth and prosperity. The manufacture of iron during the last few years has very largely increased, and we now have 175 furnaces in Pennsylvania that turn out upwards of 2,500,000 tons of pig-metal annually; this being in an impure state, containing large quantities of carbon, unreduced ore, and earthy substances, must go through another chemical process, and is thereby converted into soft malleable iron by exposure to strong heat, while a current of air plays upon its surface, and supplies the chemical ingredients necessary to make it perfect; in fact the whole process, from the time it enters the stack until ready for market, is one of chemistry; even the melting of ore, in the first process, cannot be accomplished unless the workman thoroughly understands his business, and must vary his flux according to the composition of the ore; thus, if the ore is deficient in siliceous matter, sand must be added; and if it contains a large quantity of lime, proportionally less of that earth will be required: unless these rules are strictly observed, it is impossible to form a fusible compound. Then, again,

iron must have certain essential properties, such as malleability and tenacity, which depend entirely on its containing the proper chemical ingredients. The manufacture of steel by the cementation process, depends altogether on the amount of carbon taken from the charcoal used, and forms a new compound, differing very materially in texture, sonorousness, and elasticity from the original iron.

The *coal trade* in this vicinity is of very great importance, and the amount of capital invested in its production is immense; the trade is rapidly enlarging, and is fully 25 per cent. greater than in 1870. During 1872, 115,065,146 bushels of coal, and 43,927,965 bushels of coke were received in Pittsburg, of which 56,843,000 bushels were exported to other markets. The Ohio River improvement being agitated, bids fair to become a certainty, which will, to a very great extent, regulate the supply and price in Western and Southern markets. The total area of coal in Pennsylvania is 12,245 square miles; the annual production of the several varieties being upwards of 625,000,000 bushels.

Glass and *glassware* are of great importance to the pharmaceutist, and we turn out a great variety of flint and colored glass in every conceivable form, and claim that fully two-thirds of the glass used in the United States is manufactured here; we tried to obtain some figures in regard to its manufacture, but could not get them in time for this report. There are many points of interest on which we could dwell, but will conclude with the hope that our report may prove acceptable.

We regret that our Allegheny County Pharmaceutical Association, which was organized under such flattering auspices some two years ago, has almost ceased to exist, the members generally having taken but little interest in its proceedings, but we trust that during the coming winter it will again gain new vitality and resume its interesting labors. The drug trade generally has been quite active during the past year, and the jobbing trade is extending over considerable country.

Respectfully,

WILLIAM H. BRILL.

PITTSBURG, August, 1873.

REPORT OF W. S. MERRILL, OF CINCINNATI.

Cincinnati is a prominent point for collecting in indigenous medicinal agents, but these are brought in by dealers in such small lots that it is impossible to get the exact figures. A careful estimate of such collections (excluding ginseng), obtained directly from those who gather them, or from the country merchants, and have not previously passed through any other drug market, places the amount of these indigenous drugs at 495,000 pounds during the past year.

But a small portion of this is sent into other markets in the crude state, but is either manufactured into fluid or solid extracts, into the so-called resinoids or other pharmaceutical preparations, and the balance is either ground, powdered, or pressed into packages, to meet the wants of trade before being distributed from here.

The amount of such preparations manufactured in this city is very large, but it is impossible to obtain even a reliable approximation to the facts, so I pass it by.

Glycerin has become a very important article of manufacture here. There is no doubt that it exceeds the production of any other American city. The amount produced by two of the largest manufacturers during the past year was 1,785,000 pounds.

Sulphuric acid and the other strong acids have been for many years prominent articles of manufacture here. Although I have sought to obtain for this report the amount manufactured in this city, yet I have failed, as the manufacturers are not very communicative on that particular.

Since the great demand for sulphuric acid in the refining of coal oil has sprung up, both of our manufacturers have opened branch establishments in Cleveland, in order to produce it at a lower expense, there being a great saving in expense of transportation.

The direct imports from abroad into this market for the past year amount to about $100,000 for drugs alone, this being the cost delivered in this city.

These are the only points which I shall be able to report

upon this year, and I regret my inability to add more to the interest of the Association, as also that my health will prevent my attending the meeting at Richmond.

Respectfully,

WILLIAM S. MERRILL.

REPORT OF WILLIAM P. KEFFER, OF NEW ORLEANS.

Having been appointed one of a Committee on Drug Market for the year 1872–3, I desire to submit to your consideration the following:

The drug trade of New Orleans, which is the great outlet for all the Mississippi Valley, is of itself peculiar, and unlike that of the balance of the United States, the manufacturing of pharmaceutical preparations being limited to the most simple.

The facilities for manufacture are limited, and until the war, nearly all chemicals and pharmaceutical preparations were purchased in the Northern and Eastern States.

During the war parties were, to a greater or less extent, made self-reliant, and did manufacture such as were most needed for the wants of the sick and wounded.

Since the war, staple drugs have been largely imported from Europe, and the general quality is far superior to that sold in other markets.

There is no section of the United States where retail druggists more abound, and each vies with the other in keeping only the best articles of their kind.

The mixed nationality of the population necessitates a vast variety of drugs and pharmaceutical preparations, unknown in the markets of the Eastern States.

The importations of French patent medicines are very large, physicians prescribing them with the same habit here as in France. This, of course, necessitates the wholesaler importing such as are in demand, and the fashion in them varies, as it does in dress, so that it is with the utmost difficulty stocks are kept to advantage.

The Western dealers and importers, taking advantage of the

low rate of freight, ship largely from Europe, through New Orleans. The officers of customs being civil and obliging in all their relations, the time that is caused to pass them is very short, and the delay of no inconvenience.

Below we give memoranda of a few leading imports during the fiscal year ending June 30th, 1873:

	Pounds.	Dollars.
Chloride of Lime, or Bleaching Powder, . . .	628,265	17,904
	Gallons.	
Olive Oil, *Salad*, ...	44,787	67,894
Olive Oil, *not Salad*, ...	7,449	4,784
	Pounds.	
Opium, ...	580	2,475
Bicarb. Soda, ...	553,000	21,774
Carbonate of Soda, including Sal Soda and Soda Ash,	6,195,012	157,289
Caustic Soda, ...	2,562,247	109,578

REPORT OF WILLIAM H. BROWN, OF BALTIMORE.

The drug market of Baltimore has been active during the year, with a largely increased trade. The importation of drugs into this port has been largely in excess of any previous year for home market, and greatly increased for other than Baltimore; and the drugs imported for this market are of a superior quality, some of which are worthy of mention. Among them are rhubarb root and Alexandria senna, both of which have been in large supply and of very fine quality and reduced prices.

A large trade has been done in domestic drugs, and the quality of the roots, barks, and herbs in the market better than formerly.

The finer chemicals are not manufactured to any extent in this market, the demand being generally supplied by the preparations of Messrs. Powers & Weightman. The heavier chemicals are largely prepared and in good demand. The acids of Baltimore manufacture are very superior in quality.

Epsom Salt is made in great abundance, of superior quality and advantageously to the trade.

Oil of Wormseed.—The crop of Baltimore oil of wormseed of the past year amounted to about 3000 pounds, of fine quality, the average price being about $2.

Oil of Sassafras.—The supply of this oil was moderate, of good quality, and purchased largely for export at prices ranging from 50 to 60 cents.

Oil of Pennyroyal.—Maryland oil was in limited quantities, of superior quality. Virginia and Carolina oils abundant, but quality only fair.

Horsemint.—The herb is exceedingly abundant in the vicinity of this city, but no attempt has yet been made to manufacture the oil.

Beeswax has been abundant in this market, the supply reaching 100,000 pounds, of better quality than usual, the average price being from 33 to 35 cents.

Pinkroot.—The supply has been small, but of good quality and at moderate prices.

Virginia Snakeroot has been scarce, but the quality very good; price, 30 to 35 cents.

Seneka Root is abundant in this market, of good quality; it is held in a few hands and at high prices.

Sassafras Bark has been abundant and of fine quality.

Wild Cherry Bark is abundant, but of only ordinary quality; good bark is scarce.

The wholesale drug market of Baltimore is steadily improving, both in the amount of trade done and in the quality of drugs sold. Importations are increasing year by year, and a finer class of goods in demand, showing an advancement in the character and qualifications of those engaged in the trade. The retail trade during the year has been comparatively small and much complaint made in regard to underselling.

WILLIAM H. BROWN.

BALTIMORE, September 12th, 1873.

REPORT OF THE COMMITTEE ON THE EXHIBITION OF SPECIMENS.

The exhibition connected with the Richmond meeting was held in the basement of the Virginia Opera House, located on Ninth Street, opposite the Capitol grounds. This locality possessed the desirable feature of contiguity to the meeting-room, being immediately underneath it, but owing to its rather low ceiling and the insufficient amount of light admitted, the objects exhibited could not be arranged in the most effective manner, so as to show off to the greatest advantage. Still, on Thursday evening (September 17th), when the hall was open to the public and was brilliantly illuminated with gaslight, it presented a very elegant and creditable appearance.

The absence of Mr. Thomas H. Hazard, the local secretary, from the city previous to the meeting was another serious drawback, as on account of it many exhibitors were at a loss to whom to forward their goods. Several invoices, in fact, were seriously delayed, and one at least did not reach the city in time for the meeting. We feel compelled, however, to acknowledge the untiring industry manifested by the above gentleman in arranging the specimens to the best of his ability, particularly as he had come to the city specially for the purpose of attending to the duties incumbent on his office. We, in common with many of the exhibitors, are indebted to him for much valuable assistance and information, for all of which we desire hereby to tender him our thanks.

The entire absence of soda-water apparatus and living botanical specimens also caused this exhibition to present a somewhat less brilliant and attractive array than former ones. The paucity of ornamental displays in conjunction with the somewhat meagre appointments of the room rendered it more than usually difficult to get up an effective and tasteful exposition of the numerous goods which had been received.

Your committee specially regret the apparent lack of in-

terest in the Association shown by the importers, as not a single original package of crude drugs was offered. In contrasting this neglect on their part with the liberality and public spirit so frequently manifested by these gentlemen, and the lavishness of their outlays for ordinary mercantile advertising, we are forced to the conclusion that the whole matter must be but imperfectly understood by them. We venture to assert that elaborate displays of crude drugs *en masse*, more particularly of those possessing special interest or merit from their superiority, novelty, or adulteration, will be proved to be of great mutual advantage to both exhibitor and visitor. The former will be almost certain of receiving a full return for the expense and trouble incurred in his increased sales and the higher reputation which he gains in his special branch. For the pharmacist who is frequently debarred from visiting the commercial centres and acquainting himself with the novelties of his profession, the careful study of such exhibitions must possess the highest value for the purpose of supplementing and adding to the store of his early collegiate knowledge.

While we hold that advertisements extolling articles far beyond their intrinsic value and calculated to cast discredit on competitors, would be out of place and in bad taste at our meetings, we, on the other hand, would most earnestly invite all exhibitors to adopt all fair and honorable means of demonstrating any peculiarity or special merit of their goods. With this aim in view, whenever explanations become necessary, they should be as comprehensive and lucid as possible, so that the practical utility of these expositions may be enhanced thereby. As classic models, well worthy of diligent study, we cannot too highly commend the admirable essays read to the Association by Dr. Squibb on his Universal Stand, Physicians' Pocket Cases, &c. We also feel that it is but simple justice to our exhibitors to afford them every opportunity of disposing of their commodities, so as, if possible, to avoid the return charges for transportation.

In preparing the present report, we have classified the

articles on exhibition as much as was practicable, in order to be able to present them in groups for comparison.

CLASS I. DRUGS AND BOTANICAL SPECIMENS.

McKesson & Robbins, New York, exhibited eighty samples of foreign and indigenous herbs and flowers, many of which are but rarely met with in American pharmacies. We observed pansy flowers (Viola tricolor); mullein flowers (Verbascum thapsus); mallow flowers (Malva rotundifolia); marigold flowers (Calendula officinalis); borage, coltsfoot, and peony flowers; two specimens of linden flowers, one retaining the bracts and the other freed from them; dead-nettle flowers (Lamium album); marshmallow flowers (Althæa officinalis); poppy, clover, tansy, centaury, and St. Johnswort flowers; kousso; guaza leaves; butternut, hemlock, patchouly, and orange leaves; French thyme; guaco leaves (Mikania guaco); European holly leaves (Ilex aquifolium); arbor vitæ, juniper, raspberry, blackberry, eucalyptus, poison oak, and yellow rhododendron leaves; coca leaves (Erythroxylon coca).

Wallace Brothers & Stephenson, Statesville, North Carolina, had on exhibition a very large and highly interesting collection of botanical specimens, embracing about four hundred and ten varieties. Many of these had been recently gathered, so that they were yet in the green state. All of them had been obtained from North Carolina, and none were cultivated. The above firm carries on as a regular business the collection of herbs through employés of their own, and also by purchase and barter from the country people of their vicinity. In order to control this trade more thoroughly, they buy many of the herbs under fictitious names, thus debarring the gatherers from all other markets. They claim to have sold over 20,000 pounds of pennyroyal during the past season, from which figure an estimate may be made of the consumption of these goods.

As all the specimens which were offered find a medical application on account of possessing real or fancied curative properties, for alleviating the ills that flesh is heir to, it is to

be regretted that but few of the members present had sufficient time to examine them carefully. Your committee found more material for study in this extensive collection of herbs, roots, &c., than in any other portion of the room. We concluded that it would be a capital idea for enterprising druggists to prepare similar botanical displays of indigenous plants, from various sections of the country. In order to make this an instructive feature of future meetings, we would recommend that each specimen be distinctly marked with its correct botanical name, then its Latin pharmaceutical appellation, unless these two be identical, and lastly, the various popular names applied to it in English, German, and French.

The gentleman having charge of this collection, pointed out to us green specimens of the officinal seneka plant, ginseng, and cotton bush, of which he had a branch on which the pods were just ready to burst; three varieties of sarracenia, popularly known in the South as pitcher plant, fly trap, and Indian cup; eyebright and crawley (Corallorhiza odontorhiza); wafer ash (Ptelea trifoliata); all the officinal varieties of dogwood, namely, Cornus Florida, circinata, and sericea, the latter of which furnishes the Kinnikinnick, which is smoked by the Northwestern Indians as a substitute for tobacco; yellow parilla or moonseed (Menispermum Canadense); white Indian hemp (Apocynum cannabinum); fine specimens of Lobelia inflata, cardinalis, and spicata; hardhack (Spiræa tomentosa); lionsfoot or rattlesnake root (Nabalus Fraseri); three varieties of Liatris or blazing-star; Solomon's seal (Convallaria polygonatum).

Cheney, Myrick, Hobbs & Co., Boston, Massachusetts, presented forty-eight handsome specimens of powdered herbs, roots, and barks, most of them being indigenous. The aromatic properties of these drugs had been preserved to an unusual degree. The same firm also sent in a very beautiful sample of whole elm bark.

B. O. & G. C. Wilson, Boston, Massachusetts, sixty specimens of botanical drugs in bulk, selected with the utmost care, and unanimously considered by all the members of your

committee as being decidedly the finest on exhibition. The almost marvellous perfection with which the color, the aromatic and other sensible properties had been preserved, was worthy of the highest praise, and elicited the unqualified admiration of all who observed this collection.

Forty-eight specimens of pressed herbs and flowers, packed very neatly and with unusual care.

Every article displayed by this firm had evidently been thoroughly dried and freed from all extraneous substances with such scrupulous care, that their samples constituted perhaps the brightest *bijou* of the exhibition. We were informed that many of the herbs were specially cultivated for this firm, thus enabling them to offer a more uniform and satisfactory quality than they could possibly obtain by indiscriminate purchases. Although every one of their drugs appeared to be worthy of special notice, we mention only the following, having selected them, not owing to their rarity, but on account of their remarkable beauty and cleanliness: Eucalyptus globulus, elder flowers, peppermint, vervain, scullcap, marjoram, raspberry leaves, golden rod, pipsissewa, mullein, sage, catnep, boneset, red rose flowers, marigold flowers, princess feather, chamomile, wormwood, tansy, hyssop, cut althea root, safflower, yellow jessamine root, life everlasting, spearmint, fennel seed, hacmatac (Larix Americana), sassafras bark, Job's tears, ladies' slipper root, unicorn root, witch hazel bark, bryonia root, beth root, mallow flowers, fringe tree (Chionanthus Virginica), crawley, stillingia root, maiden hair, and parsley.

Lazell, Marsh & Gardiner, New York, had on exhibition some interesting specimens of drugs, comprising Japanese nutgalls; handsome cut rhubarb, prepared from selected China root; East India soap bark; true Pareira brava root (Chondodendron tomentosum), agreeing with the description recently published by Daniel Hanbury; fictitious cake scammony, marked as containing 10 per cent. of resin; samples of a lot of Rheum rhaponticum, which has been rejected by the New York custom-house; Persian opium, which is said to be merely an aqueous extract of the entire capsule, and con-

tains only about half the usual quantity of morphia: the cakes of this so-called opium were dark in color, and free from rumex seeds and leaves; dried fruits of the annato tree; true Oregon balsam of fir; various samples of fine cardamom seeds; eighteen very handsome specimens of powdered drugs, among which we noticed powdered calabar beans.

Powers & Weightman, Philadelphia, sent down several very fine samples of Calisaya and red Peruvian barks; also nux vomica.

W. Herman T. Frueauff, Columbia, Pa. Glitsch's imperial Russian mustard, claimed to be the strongest, purest, and best in the world. We found the mustard to be of very fair quality, and to possess a peculiar horseradish flavor, which seemed to be much admired. The circular accompanying the article states that it is furnished to all prominent establishments throughout the Russian Empire, "from Siberia to Asia."

Rosengarten & Sons, Philadelphia. An interesting specimen of cultivated East India cinchona bark, from the government gardens at Ootacamund, in the Madras Presidency. It was designated as Neilgherry cinchona bark, old mossed succirubra.

Dr. E. R. Squibb, Brooklyn, N. Y. Three sample lots of rhubarb, representing the highest grades at present met with in commerce. All of these were fully explained in a volunteer paper read before the Association. For the purpose of comparison with these, Dr. Squibb had also brought along a couple of pounds or so of true Russian rhubarb, taken from his cabinet.

William B. Burk & Co., Philadelphia. Chloride of lime put up in air-tight packages for the convenience of the retailer, by M. W. Cook & Co., Brooklyn, N. Y.

Good, Roof & Co., New York. Fine virgin olive oil manufactured by Victor Galli, France.

Charles W. Hancock, Philadelphia, exhibited Chinese nuts

as a botanical curiosity. These nuts are dark-brown in color, somewhat triangular in shape, two of the angles being prolonged into beaked cornua, producing a striking resemblance to the horns and head of an ox. Your committee were unable to ascertain their botanical origin.

CLASS II. PHARMACEUTICAL PREPARATIONS.

Hance Brothers & White, of Philadelphia, deservedly take precedence in this class, in virtue of their elaborate and attractive display, presenting the most finished and ornamental appearance in the room. We specially commend the good taste shown by them, and desire to recognize the great labor and expense which they have incurred. The preparations exhibited by them were nearly all put up in finely engraved quart tincture bottles furnished with glass labels. They were tastefully arranged on a beautiful triangular stand of black walnut richly ornamented with gold. The intention was to have this stand, which had been specially made for the present exhibition, surmounted by a handsome silver globe, but unfortunately the altitude of the room did not admit of this being placed in position.

We enumerated the following preparations of this firm: Eight varieties of pure fruit juices, put up in quart champagne bottles; ten samples of sugar-coated pills and three of medicinal lozenges; a fine specimen of monobromated camphor; eight bottles of select powders; granular citrate of magnesium; thirty-six specimens of fluid extracts, eight of popular elixirs, six of medicinal syrups, and four of officinal oleoresins; nitrite of amyle; chlorodyne; liquor gutta percha; eight specimens of glyceroles, collodions, &c.

McKesson & Robbins, New York, had on exhibition twenty-six tall sample-jars, filled with an assortment of their gelatin-coated pills.

Robert W. Gardner, of Jersey City, exhibited a sample of his protected solution of ferrous nitrate (liquor ferrosi nitratis), which is claimed to be superior to other ferruginous com-

pounds on account of containing no excess of acid and not being astringent.

Bullock & Crenshaw, of Philadelphia, presented a large and neatly arranged collection, comprising two hundred varieties of their well-known sugar-coated pills and granules. Many of these were put up in large and handsome glass-label jars.

William R. Warner & Co., Philadelphia. The goods of this firm happened to arrive too late, so that there was not sufficient time left to bestow the proper attention on their arrangement. They exhibited a handsome mahogany case containing ninety specimens of sugar-coated pills and about twenty-five of granules; also, fifty vials of pills finished off in the style in which they are supplied to the market. These pills being quite familiar to the members, we have no doubt but that they would have manifested much more interest and pleasure in seeing the medal recently awarded to these preparations in Vienna.

O. Neustadt & Co., New York (successors to Howell & Onderdonk). Twelve specimens of various unofficinal preparations put up in quart bottles. A patented article called Phosphated Candy, each lozenge of which was stated to represent six drops of *dilute phosphoric acid*, although the circular which was handed to us recommends the preparation exclusively for cases dependent on impaired nervous nutrition, in which *phosphorus* has lately been found to be very beneficial. The impression intended to be conveyed by this eulogistic description is evidently that the use of this candy will be followed by results analogous to those obtained from the administration of phosphorus.

Ira W. Blunt, Richmond, Va., exhibited and personally explained the merits of Mann S. Valentine's Preparation of Meat-Juice. We were informed that the article is made by comminuting good fresh beef on a sausage machine, submitting it to a moderate heat for a short time, and then subjecting it to an hydraulic pressure of one hundred and fifty to two hundred tons, thus expressing the whole soluble constituents of

the meat. The liquid juice is then evaporated in a vacuum pan heated by a water-bath. Heat is applied to this by means of steam, so that the temperature is kept at about 125°, and never allowed to exceed 130°. The concentration is continued in this manner until a consistency of 26° to 27° Baumé has been attained. The process is carried on without regard to the season or weather. No antiseptic of any kind is added, so that the juice appears to be pickled in its own natural salts, as no difficulty is experienced in the preservation of the article. As the preparation is not subjected to sufficient heat to coagulate the albumen, this is retained in its natural state, in which it is claimed to be more readily assimilable.

Numerous testimonials from eminent physicians, among whom we find such illustrious names as Dr. J. Marion Sims, Prof. D. Hays Agnew, Dr. Gaillard Thomas, Dr. D. W. Yandell, and many others, indorse the article as being singularly well adapted to cases of great gastric irritability, and also to those in which food in a concentrated form has to be forcibly administered. Your committee were also so favorably impressed after partaking of the meat-juice diluted with ten times its bulk of water, and listening to Mr. Blunt's lucid explanations, that several of them resolved henceforth to recommend this preparation to their customers in preference to the solid extracts. Prof. Agnew, in a personal conversation lately, expressed his approval of this meat-juice in even higher and more positive terms than in his printed card. Since then the writer has had three opportunities for trying this preparation, all of them fully confirming his previously conceived high expectations. We would suggest a pharmaceutical application for the article, to which it seems to be well adapted, namely, for the preparation of nutritive elixirs, wines of beef and iron, &c., which are at present so fashionable.

Edward A. Smith, Baltimore, Md. Six specimens of pure fruit-juices, put up in hermetically sealed quart champagne bottles. The Southern members of your committee, who have used juices of this manufacture, speak very highly of them.

E. F. Houghton & Co., Philadelphia. Cosmoline, explained on their circular as being purified and concentrated petroleum. Also the following pharmaceutical preparations, which had been prepared from cosmoline in lieu of animal fats and vegetable oils: simple cerate, carbolated simple cerate, oxide of zinc ointment, cold cream, red precipitate ointment, Goulard's cerate, resin cerate, iodine ointment, and spermaceti cerate.

The representative of the house was not at liberty to divulge the particulars of the manufacture of cosmoline, but gave us the following outlines. Crude petroleum is subjected to distillation for the purpose of expelling the light hydrocarbons. The residue is purified without the use of chemicals, and decolorized by animal charcoal.

Cosmoline is stated not to evaporate below 400°. Having no affinity for oxygen, it never becomes rancid. The manufacturers claim that it possesses to an eminent degree the property of reducing inflammation. They specially recommend carbolated cosmoline cerate for the cure of parasitic skin diseases, and as a dressing for indolent ulcers.

As the information which we were able to elicit in regard to the composition and preparation of this article was rather unsatisfactory, one of the members of your committee felt induced to offer and accept the query: Cosmoline, what is it? We trust that he will be able to enlighten the Association more fully on this subject at our next meeting. Without desiring to anticipate what we expect to be an able and exhaustive answer, it seems to us hardly probable that cosmoline should consist of anything beyond paraffin and some of the heavy coal oils, which are sold for lubricating. As the article seems to possess some real merits, and is certainly gaining favor with physicians, it would be desirable for pharmacists to prepare it themselves, instead of paying the somewhat exorbitant price of one dollar per pound.

Powers & Weightman, Philadelphia. Elegant specimens of the essential oils of cloves, allspice, and cubebs, distilled by themselves.

J. Bartlett Patten, of Boston, Mass., exhibited court-plasters

manufactured by C. B. Robbins, M.D., of Worcester, Mass. We noticed samples of arnica court-plaster, isinglass plaster, surgeons' adhesive plaster, surgeons' dressing plaster, arnica and india-rubber court-plaster. All of these appeared to be of most excellent quality. As far as we were able to judge, they were fully equal to the best manufactured either in this country or abroad.

Keasbey & Mattison, Philadelphia. An assortment of their granular effervescent salts, in which branch of manufacture this firm has attained peculiar excellence. To the great chagrin of Mr. Mattison, who was present at the meeting, a collection of these salts in large and handsome show bottles, which he had forwarded by rail, failed to reach its destination in time; consequently, he was only able to exhibit the samples carried by him while travelling. We noticed salts representing all the more popular mineral springs, such as Carlsbad, Congress, Crab Orchard, Kissingen, Pullna, Rockbridge Alum, Seltzer, Vichy, &c. Also, about twenty-five other effervescent preparations, the composition of each being stated on the label. We were quite favorably impressed by these articles, as there seem to be obvious advantages attendant on this method of administering many remedies, particularly saline aperients. The firm also lays special stress on their granular effervescent salts of citrate of lithium and iodide of iron.

Lazell, Marsh & Gardiner, of New York, presented the most varied display of fluid extracts in the exhibition, comprising eighty-nine specimens. Also, solution of oleate of mercury, and the same with an addition of two per cent. of morphia; pyrophosphate of iron, citrate of iron and quinia, and citrate of iron, quinia, and strychnia in handsome scales; four samples of fine-powdered resinoids; syrups of the lacto-phosphates of iron and lime; granular muriate of ammonia; four specimens of solid extracts; confection of senna; stramonium ointment made from the leaves.

Prof. C. Lewis Diehl, of Louisville, Ky., exhibited the well-known saccharated pepsin and concentrated pepsin, prepared by Prof. Emil Scheffer, of the same city.

J. Creuse, New York. Tasteless tincture of muriate of iron; tasteless syrup of iodide of iron; tasteless elixir of iodide of iron; tasteless iodide of iron salt.

CLASS III. CHEMICALS.

Powers & Weightman, of Philadelphia, made the most brilliant and attractive display in this class. Their unique collection occupied a prominent position near the entrance, and excited the admiration of all the visitors. The non-professional public paid special homage to the immense bell glass replete with sulphate of quinia, which seems to be a household term unfortunately but too well known in the South. The exhibition of these chemical products, both in regard to the tasteful arrangement as well as in the quantity, quality, and variety of the specimens, was in harmony with the established reputation of this house.

About $1400 worth of sulphate of morphia was shown in large blocks, just as it is taken from the crystallizing vats previous to being put up, except that slight superficial discolorations are first carefully removed. The entire collection of one hundred and seventeen specimens represented a value of over $5000, on which an insurance of $4500 had been effected. Many of these filled large three-gallon jars, such as the beautiful samples of the sulphates of cinchonia and cinchonidia. We were informed that the production of these salts has vastly increased of late, as the medical profession is quite generally becoming more thoroughly convinced of their applicability as substitutes for quinia. Messrs. Howards & Sons, of England, who have paid special attention to cinchonidia, speak of it as follows: "In the quinidine of commerce, cinchonidine has always been present in varying proportion. The medical value of red bark, C. succirubra, is to a great extent due to its presence. Whenever tried, good results have followed; and owing to its being at present little known, it is very cheap, in comparison with quinine, while its therapeutical efficiency is almost identical."

Although every chemical exhibited by this firm seemed

worthy of special notice, we were most forcibly impressed by some very large and perfect crystals of nitrate of silver, very handsome sulphate of iron, an elegant and showy aggregation of the crystals of sulphate of copper, the tannates of quinia and bismuth, carbonate of manganese, theina and caffeina, very smooth heavy calcined magnesia, muriate of quinia, chrome alum, iodide of cadmium, monobromated camphor, iodoform, double sulphate of iron and ammonia, menispermin, solution of bimeconate of morphia and citrate of caffeina. Iodide of potassium, the manufacture of which has been but recently commenced by this establishment, was also exhibited in much finer and larger crystals than the imported article.

While investigating these products, we ascertained incidentally that this firm, in common with other large American manufacturers, positively refuses to make or sell muriate of cinchonia. Being well aware of the close resemblance which these two salts bear to each other, they do all in their power to prevent the fraud of substituting the one for the other. They are also careful not to dispose of any other salts of cinchonia indiscriminately to any one applying for them, but only to their regular customers.

Eimer & Amend, of New York, exhibited seventy specimens of rare chemicals, all of which had been manufactured by E. Merck, of Darmstadt, Germany. They comprised asparaginic, camphoric, kinic, carbazotic or picronitric, crystallized iodic, molybdanic, monochloracetic, salicylic, titanic, uric, and wolframic or tungstic acids; æsculin; carbazotate or picronitrate, molybdanate, phospho-molybdanate, wolframate and vanadate of ammonium; crystallized chloride and arseniate of antimony; sulphate of berberina; lacto-phosphate of bismuth; bromal hydrate; iodo-bromide, phosphide, lactate and lacto-phosphate of calcium; cantharidin; crystallized terchloride of carbon; chloride of chromium; croton-chloral-hydrate; pure dry ergotin; dried acetate, benzoate, saccharated carbonate, saccharated iodide, saccharated oxide, lacto-phosphate, oxalate, picronitrate and succinate of iron; dialyzed oxide of iron; carbonate, chlorate, citrate and lactate of iron

and manganese; glycyrrhizin; hæmatoxylin; inulin; kousse in; lactucin; boro-citrate of magnesia; meconin; narceina; papaverina; pure German pepsin, prepared according to Lamatsch, and free from starch; phloridzin; sulphindilate of potassa; santonate, sulphovinate, and tungstate of soda; lactate of soda and magnesia; solania; theina; thymol; pure urea; nitrate of urea; phosphate, phosphite, phosphide, and hypophosphite of zinc.

L. R. Krumbhaar, Philadelphia. Sulphate of iron, of very handsome appearance.

Paine Brothers, New York, had on exhibition hydrate of chloral, manufactured by Saame & Co., Ludwigshafen, Germany; hydrate of chloral, recrystallized by Drs. Ehrhardt & Alexander, New York; creasote, made from wood-tar only by T. Morson & Son, London; German chloride of æthyliden.

Rosengarten & Sons, Philadelphia, exhibited forty-five fine specimens of their well-known chemicals, which were attractively displayed by the gentleman in charge of their collection. We noticed particularly the sulphates of morphia and quinia, sulphocarbolates of potassa, soda, zinc, and lime, bisulphate of quinia, benzoate of soda, a very beautiful specimen of mannite, iodide of manganese and tannic acid, the latter being nearly colorless. This firm also exhibited Bowers's pure glycerin, for which a prize medal has lately been awarded in Vienna.

Charles T. White & Co., New York. These gentlemen, who are also the recipients of a Viennese medal of merit, exhibited a case containing eighty vials of rare chemicals and reagents, among which we observed acetal; chromic, formic, hippuric, malic, meconic, molybdic, phosphorous, picronitric, salicylic, silicic, titanic, uranic, uric, and wolframic acids; alloxantin; acetate, arseniate, and bichromate of ammonium in crystals; benzoate, bicarbonate, binoxalate, bisulphate, bisulphite, borate, citrate, chromate, formiate, and succinate of ammonium; pure anilin; nitrate, sulphate, bromide, and chloride of lithium; acetate, carbonate, chloride and phosphate of manganese; molybdenum; bromalhydrate; arsenite of anti-

mony; chloride of barium; oxide of chromium; sesquichloride of chromium; metallic cobalt; acetate, arseniate, carbonate, chromate, nitrate, and oxide of cobalt; aluminated copper; arseniate, arsenite, bichloride, carbonate, monochloride, ammonio-chromate, nitrate, nitroprusside, oxide, sulphuret, and sulphocarbolate of copper; carbonate, chloride, nitrate, oxalate, oxide, and sulphate of nickel; bichromate of rubidium; molybdate and nitroprusside of sodium; thallium and its iodide; oxide of uranium; pure cyanide of zinc.

In addition to these, fifty-four specimens of commercial chemicals manufactured by this firm were exhibited. Our attention was drawn to resublimed sesquicarbonate of ammonium and very pure acetic acid, both of them free from all empyreumatic odor; the house makes a specialty of these, for the purpose of enabling druggists to prepare a very superior article of the solution of acetate of ammonium.

We further enumerate resublimed iodine in unusually fine crystals; subnitrate and subcarbonate of bismuth, both of them said to be entirely free from arsenic and silver; glacial phosphoric acid, in very large and beautiful crystals; true benzoic acid; the sulphates of morphia and strychnia; pure citrate of bismuth and ammonium; gallic acid, strychnia and bromide of potassium; which three are largely sold in the London market by this firm, as we were informed by their representative. The style of putting up goods which has been adopted by this house is peculiar with them, being rather more ornamental than that of our Philadelphia manufacturers.

CLASS IV. PERFUMERY AND DRUGGISTS' SUNDRIES.

William B. Burk & Co., Philadelphia. An assortment of very fine hand-cut vial corks of uniform good quality, each of them adapted to several sizes of vials. Also, samples of corkwood, from which corks had been cut by machinery. A choice selection of surgeons' and Turkey cup sponges; Wattis's patent pocket flasks. The peculiarity of these consists in having the metal spun around the neck of each bottle. As the neck is moulded angular, the cap becomes so securely fas-

tened, that it is quite immovable. The inventor claims that as plaster of Paris and all other cements are dispensed with, the flavor and purity of the contents of these flasks will be preserved for any length of time.

Cheney, Myrick, Hobbs & Co., Boston, Mass., exhibited a new style of wooden boxes, manufactured for druggists' use by the Mount Washington Box Company of Boston. All of these boxes consist of four layers of veneer, which are firmly united by glue. They are warranted to be impervious to ointments. The workmanship of these boxes is very neatly executed, so that they present an elegant and attractive appearance. They are made of black walnut and silver poplar, in many different styles and shapes, adapted to tooth powders, ointments, &c.

Also puff boxes, manufactured in a similar manner by the same parties out of Florida cedar wood and black walnut, lined with white holly. These are ornamented on top by the decalcomania process and varnished, so that they present a more finished appearance.

Waters & Ricksecker, New York. Fine French Beranger scales, marked $18. Small English bent glass counter show cases with ebony frames. Turned wood boxes of very elegant finish. Patent imperishable paper pill-boxes of domestic manufacture, furnished with indestructible lids and bottoms. Assortment of superior quality hand-mirrors of satinwood and ebony. Brass suppository moulds. Fine hair brushes with mirror backs. An assortment of choice toilet bottles, some of them inclosed in neat cases. Lincoln & Co.'s English adhesive plaster, chest protectors, and nursing bottles with black rubber fittings and stoppers. Brass powder folders with ratchet attachment. Goodkind & Sons' London handkerchief extracts, retailing at 50 cents.

Lazell, Marsh & Gardiner, New York. Fourteen pound bottles of concentrated extracts for the handkerchief, manufactured by themselves; each of these represented a distinct perfume. Ballard's Cologne oil, and Redwood's Cologne oil,

both of them furnished with directions for use. Florida water in bottles for retailing.

S. E. Dove, Richmond, Va. Bouquet d'Orleans Cologne put up in bottles resembling razor strops in shape. We found the quality of this article to be very fair, and we were informed that it was very popular in Virginia.

CLASS V. APPARATUS AND SHOP FURNITURE.

Dr. Wilson H. Pile, Philadelphia. We consider this gentleman entitled to special praise for the pains he had taken to exhibit his large and interesting collection of delicate instruments and fragile glassware, particularly as he suffered not only the almost inevitable loss from breakage, but had also some of them abstracted from his table. We made notes of the following apparatus, the greater part of it being Dr. Pile's own manufacture: Fine hydrometers, lactometers, and alcoholometers, all of them graduated with great care. Saccharometers giving the actual number of pounds of sugar which are contained in one gallon of syrup; others, which indicate the actual percentage of sugar. Physicians' urinometer cases. One hundred and one thousand-grain specific gravity bottles. Aluminium grain weights and angular ten-grain weights. Accurately graduated glass tubes for testing and correcting graduates. Minim pipettes. Chemical thermometers of various styles. Photographers' volumetric silver test-tubes. Volumetric test-tubes for acetic acid. Pipettes of various sizes, graduated in cubic centimetres. A set of Hobbs's pressed graduates, marked on the interior, which were referred to in the Doctor's essay. These, as well as a set of Hodgson's patent graduates, which did not come to hand in time for the exhibition, were intended for presentation to the Richmond Pharmaceutical Association.

McKesson & Robbins, New York. Neynaber's patent pharmaceutical steam apparatus, for evaporating and distilling. This is virtually a double boiler, the inner one of which forms the still; it is so contrived as to be constantly surrounded by water or steam, so that the preparation will not be injured by

direct heat. The outer boiler is furnished with a safety-valve for the escape of steam, with a self-acting contrivance for supplying water, and with a steam whistle to indicate automatically when the supply of water has been exhausted. The entire apparatus is constructed of copper, but the interior faces of the still proper, of the connecting-pipe and condenser are coated with tin. Having used one of these stills for a number of years, we can personally indorse them as being well suited to the requirements of those pharmacists who prefer preparing their own fluid extracts to purchasing them. We observe, however, that in the circular handed out, the apparatus is also recommended for boiling liquids requiring more pressure than water, especially syrups. This reminds us of the explosion of a similar contrivance made by Mr. Neynaber, which occurred on the premises of the writer some years ago, and which resulted in completely drenching the unlucky manufacturer with syrup that was nearly boiling hot, as he was superintending the trial of his invention. With all due regard to the improved construction of the present apparatus, we should personally feel considerable reluctance to loading down the safety-valve according to the directions, for the purpose of obtaining high temperatures, unless the boiler had previously been properly tested by hydraulic pressure.

Andrew's Patent Filter-Racks of different sizes. These are constructed of wire, and they appear to be a useful contrivance for facilitating and hastening the process of filtration.

Hance Brothers & White, of Philadelphia. Hance's non-wasting percolators and conical plate, drug, and spice mills.

Dr. E. R. Squibb, Brooklyn, N. Y. Physicians' pocket-cases for concentrated medicines in a liquid form, each case being furnished with a graduated pipette. A general apparatus stand of an entirely new design. An upright condenser, offered as an improvement on Liebig's. Pinch-cocks of an improved pattern. All of these were fully elucidated by able volunteer papers read before the Association.

Ira W. Blunt, Richmond, Va. A very ingenious automa-

tic bottle-filler, used in putting up Valentine's meat-juice, for which purpose it is evidently well adapted. It is patented by W. H. Sherwood, of New York. The most noteworthy and interesting feature of this apparatus consists of a series of siphons, the outer extremities of which are encircled by wire springs having a connection with an interior arrangement for closing the aperture. When these springs are pushed upwards, which is accomplished in the act of placing a vial in position to be filled, the siphons are opened. There is no danger of overflowing or spilling any portion, as the liquid in the tank is constantly maintained at the proper level for filling the vials to the desired point. The spring is again released as soon as a vial is removed, thus effectually closing the siphon before the air has an opportunity of entering.

Whitall, Tatum & Co., Philadelphia. This well-known firm exhibited a full line of druggists' shop furniture bottles of the modern round shoulder, mushroom stopper style. A portion of them were embellished with glass labels of various patterns. Also, French square, and union oval perscription vials of many sizes; a large assortment of new styles of perfumers' glassware. The models for these were selected in Europe by one of the partners of the concern, who visited the most renowned glass-works of Germany and France expressly for this purpose. A series of druggists' poison bottles, blown out of dark-blue glass, and externally covered with sharp projecting points, the object being to appeal in an effectual manner to both the sense of touch and sight, so as to caution every one handling these vials. We were also informed that the firm contemplates manufacturing a line of yellow or amber-colored druggists' bottles, with a view to preserving essential oils more perfectly from the actinic rays of the sun's light.

Lyman R. Blackman, Newport, R. I. A circular suppository mould of new design.

Lazell, Marsh & Gardiner, New York. A curious double or reversible mortar made of wedgewood.

J. Blair, of Richmond, Va., exhibited Evans's pharmacists'

microscope, manufactured by Lescher & Evans, London. It was furnished with various powers, magnifying up to 400 diameters.

Dr. J. H. Richardson, Niles, Berrien Co., Michigan. A perforated filter-support made of tinned iron.

CLASS VI. WINES AND LIQUORS.

Dr. James B. McCarthy, of Richmond, Va., exhibited seven specimens of pure native wines produced in his vineyards in Henrico County, about three miles from the city. Each variety was accompanied by a sample of the grapes from which it had been produced. The Doctor also endeavored to indicate the relative strength of the wines by placing wine glasses of a different size before each bottle. The intention was to imply, in a figurative manner, that, although the glasses differed widely in their capacity, they would all of them contain the same amount of alcohol when filled from the bottles before which they had been arranged. Your committee, after a careful examination of these wines, were very favorably impressed by them. Regarding them as being strictly pure, we feel it to be a duty incumbent upon us to direct attention to the very moderate prices at which they are offered.

We were first shown two wines, the one of them resembling a claret and the other a sherry, both of which had been obtained from the same growth of Concord grapes, the difference being altogether due to peculiarities in the mode of preparation, as no artificial ingredient had been used for either. We next tasted two varieties, both of which appeared to be analogous to the world-renowned wines from the Rhine, although the one had been made from the Delaware grape and the other from Norton's seedling. The wine obtained from the latter contained 13 per cent. of alcohol, being the strongest of the collection. The product of the McCarthy grape was next shown, called by the Doctor White Henrico Wine; it contains only about 10 per cent. of alcohol, and tastes very pleasant and sweetish. We then examined the Herbermont wine, obtained from a grape of the same name, which was

first brought to this country by President Monroe; we found it to possess a mellow and agreeable flavor. We concluded this arduous portion of our task by partaking of the sylvan offering to the chaste goddess Diana, which again awakened pleasant reminiscences of the venerable "flumen Rhenum."

Dr. McCarthy kindly invited the members of your committee to visit and inspect his vineyards, wine cellars, and presses, so that we might personally view the whole process of manufacture. We regretted exceedingly that want of time prevented us from availing ourselves of this hospitable offer.

Good, Roof & Co., New York. Elixir de Vichy, an aperient liquor, intended as a kind of substitute for the natural water, but recommended chiefly for digestive derangements. It was invented, and is manufactured by Poigné, distiller at Moulins, France, who claims to have devoted the studies and perseverance of several years to its perfection. It was stated to us that three-fourths of an ounce of this stomachic cordial represented the mineral constituents of one pint of Vichy water. The circular accompanying the article, which had evidently been issued for a French public, reads to the effect, that taken before meals, this liquor may advantageously replace absinthe, without being attended by the inconveniences of the latter. Further on, we find the following quaint remark: "Thus it is, that the composition of a new table liquor (cordial), becomes a true work of science, worthy of the meditations of the most distinguished men."

UNCLASSIFIED.

Janentzky & Co., of Philadelphia, exhibited an elegant upright show case, containing a fine selection of goods of their own manufacture, comprising some beautiful cases of water colors for artists' use, toy color boxes in many varieties, and the new style of moist water-colors in bottles, used chiefly for heraldic and ecclesiastical illuminations, which have formerly always been imported from England. We noticed also a

handsome assortment of camel-hair pencils and artists' palettes.

T. M. Saunders, Richmond, Va. Fine rose leaf smoking tobacco, put up in a new style of elegant packages. The article had been manufactured by Robert W. Oliver, in Richmond, Virginia.

Walter D. Blair & Co., of Richmond, Va., exhibited a fine sample of twist chewing tobacco, from the factory of Edwin Wilson, Richmond, Virginia.

John W. Sheddon, of New York, sent to the exhibition diabetic flour of his own preparation, and water from the Massena Springs of New York.

Charles May & Co., of Glen Allen, Virginia, present an assortment of druggists' labels and envelopes, of plain but neat designs, which they offer to furnish at most remarkably low prices. We quote from their price list for one hundred labels of a sort, printed in three colors on the finest quality of writing-paper, trimmed, bandaged, and delivered free of charge, 10 cents. Even this almost nominal figure is subject to a discount of 10 per cent. on orders over $10, and 20 per cent. on orders over $100. When greater numbers of a kind are printed at one time, their price is of course proportionately very much lower, the minimum being 36 cents net per 1000, for labels as above described.

American Pharmaceutical Association had on exhibition for inspection by the members: The Medical and Surgical History of the late War, in two volumes, finely illustrated by chromolithographic plates; this elaborate and valuable record had been presented to the Association by the Surgeon-General's office; the Report of Columbia Hospital for Women, which had been presented by the Secretary of the Interior; the Album, containing the cartes de visite photographs of British pharmacists, presented by Mr. H. B. Brady; and an Album with photographs of the members of the Association.

J. B. Lippincott & Co., of Philadelphia, presented to the Association, the following of their publications, issued in the course of the present year: Cooley's Handbook of Compound

Medicines; Cooley's Handbook of Perfumes, Cosmetics, and other Toilet Articles; the Pharmacopœia of the United States.

S. Mason McCollin, Philadelphia. An assortment of ring, horseshoe, and S S pessaries, manufactured out of watch-springs, coated with pure gutta percha, according to the Breed process. The advantages claimed for these are, the freedom from irritating coloring ingredients, and the fact that they will not become brittle or crack, as is usually the case with pessaries made of untempered or impure gutta percha.

Oscar G. Cosby, of Richmond, Va., had on exhibition a model of an improved invalid's bedstead, invented by himself. This very ingenious contrivance is provided with a movable bottom, which supports the mattress, and is so arranged that the portion nearest the head can be elevated, and the opposite half lowered to any desired angle, so as to form a kind of reclining chair. There is also a device worked by a crank, by means of which the entire mattress may be elevated, without altering the horizontal position of the patient, or disturbing him in the least. A foot-rest is attached, which slides backwards and forwards, but can be secured wherever it may prove most convenient, thereby contributing materially to the comfort of the patient. Although the numerous cranks cause the apparatus to appear somewhat complicated, all portions of it worked very smoothly and easily, seeming to be well adapted to the purposes which they are intended to fulfil.

In concluding our report, your committee would respectfully suggest, that in order to insure to the Association a larger, more varied, and consequently more interesting and valuable exhibition at its next meeting, it will be of vital importance to render these displays more directly remunerative to the exhibitors. If measures to this effect be carried into execution, they will necessarily stimulate importers, manufacturers, and merchants to undertake the very great trouble and expense of forwarding a creditable selection of their respective productions and commodities. It would be very desirable to have more abundant contributions from importers of

drugs, chemicals, and fancy goods, and from manufacturers of paints, oils, perfumery, soda-water apparatus, scales and weights, optical, chemical, and philosophical apparatus, glassware, glass labels and signs, &c. For the furtherance of this object, we would offer the following suggestions:

1st. The more thorough advertising of the next meeting by means of comprehensive circulars, to be forwarded to all respectable importers of drugs and manufacturers of goods connected with pharmacy.

2d. The request on such circulars to accompany all contributions with full price lists, if possible, with samples for distribution, and whenever it is practical, with a representative of the house charged with the duty of making all the necessary explanations in the exhibition-room, to whom the privilege of disposing of his merchandise would be guaranteed by the Association.

3d. A request to the local secretary at the place of meeting to endeavor to effect a temporary suspension of all legal restrictions to the sale of goods without special license, so that our exhibitors may feel assured that they will not be involved in annoying legal technicalities.

Adolph W. Miller, M.D., Ph.D., Philada., *Chairman*,
Joseph L. Lemberger, Lebanon, Pa.,
G. J. Luhn, Charleston, S. C.,
David Hays, New York,
William H. Scott, Richmond, Va.,
Committee.

REPORT OF THE COMMITTEE ON ADULTERATIONS AND SOPHISTICATIONS.

In the arrangement of the following report, your committee have adhered to the division adopted in the last report made to this Association in 1871.

There are three sources from which information on the subject in question has been derived, namely, personal ob-

servation, private communication, and published reports and journals.

First, as regards the latter, there is a large number of substances on which adulterations are reported, so as to make it somewhat difficult to draw a line, in order to exclude those which have no bearing upon our profession; nevertheless, it is safer to draw the line a little too wide than the reverse. The search after private information, which would undoubtedly be the most fruitful source, is, in the experience of your committee, a laborious and not unfrequently thankless task. A great many members of our profession, it is feared, are affected with a chronic wilful blindness, in regard to purity and genuineness of drugs; many at least seem to care but little about the quality of the articles they receive, as long as they *appear* to be genuine, and are salable. Many others, who are more watchful, either fail to make a note of some item which has come in their way, or they lose the sample, and generally happen or manage to keep the information within their own particular circle of acquaintance. Personal solicitation for contributions is frequently without result, or is met with a bland reply, somewhat like the following: "My dear sir, you are welcome to all the information in our possession; we make it a point to deal only in pure articles; if our customers wish inferior goods, they must obtain them somewhere else; you may most probably hear of something in your line somewhere else." To the credit of our profession be it said, that such an answer represents quite frequently the true state of the case; but in how many instances is it prevarication? We may be proud to reckon among our number many good and true men, who hold the reputation of their products and their own good name higher than paltry gain obtained by unfair means; the honesty of these men is of an *agressive* dynamical character, spurring them to search for frauds, and to wage war against them. Another class, standing on a much lower level, are those who, although loath to overstep the boundaries of honesty, yet attach to it their own particular interpretation; they are willing to condemn anything palpably impure, but unless their special attention has

been called to it, they rather prefer to be let alone; theirs may be called *passive* or potential honesty. Let us hope that the ranks of the former may recruit themselves from the latter. Those persons finally, who strive to impose upon the unwary, and to fatten upon their ill-gotten gains, is that class against which our efforts should be mainly directed. The laws against adulteration of food and medicine should be made more strict, and rigidly enforced, and it should be made a crime to tamper with them. Detection of frauds (as for instance the sale of fictitious quinia in the South), should receive the widest possible publicity, and pharmacists and others interested in the cause should be urged to report any new facts coming to their knowledge.

The remaining source of information, namely, personal observation, is of necessity limited to the time and opportunities of the observer. No one man alone, nor yet three men, can be expected to examine a large number of substances, but they will have to confine themselves to whatever may happen to come in their way and may rouse their suspicion. Nevertheless, if every member of the Association were to share in the labor, and (providing he should meet with anything of interest), were to inform the committee thereof, a very creditable and, it is feared, formidable report would be the result. The plan of analyzing one (or more) specially selected articles, in as many samples as can be procured from different sources, like Professor Markoe's report on Citrate of Magnesium, or Mr. Grassly's report on Seidlitz Powders, is a very good one, and deserves consideration at the hands of the succeeding committee.

Your committee have left out of the report a number of substances, on which the former report (1871) holds still good. Whenever practicable, the methods by which the different adulterations had been detected have been mentioned; it is to be regretted, however, that many reports of adulterations are not also accompanied by the methods employed in their detection.

Respectfully submitted,

CHARLES RICE,

Chairman.

I. CRUDE DRUGS AND COMMERCIAL PRODUCTS.

Ammoniacum.—In addition to the more common impurities found in this gum-resin, most of which are chiefly due to carelessness in collection, a most ingenious falsification has been met with by Ch. Menière, who found imbedded in it globular translucent pieces of quartz, varying in color between white, yellow, orange, and reddish, of the size of an almond. A peculiar kind of quartz (quartz resinite), found near Boigneau, had been used, which gives it a very deceptive appearance. Journ. de Pharm. et de Chim., Dec. 1872, p. 355; Am. Journ. Pharm., 1873, p. 71.

Assafœtida.—A considerable quantity of inferior gum is floating about the market. The amount of sand, stones, and other gross impurities has greatly increased. An inducement for adulteration has been the large demand for this substance during the late epizootic, and the almost total consumption of the supply on hand.

Many lots of powdered assafœtida are met with in the market which are almost entirely odorless.

Balsam Copaiva.—Prof. E. S. Wayne has met with several specimens of balsam copaiva during 1872, adulterated with castor oil. The spurious balsam seemed to have a thicker consistence than the genuine, and appeared to be of a lighter color. Petroleum benzin was found to be a good separating medium, as it dissolves pure copaiva, but not castor oil. This test, however, would not detect Venice turpentine or fixed oils other than castor oil. It was found that in using one volume of the spurious balsam and three volumes of benzin, the lower layer represents double the amount of castor oil present; this was ascertained by making a mixture of balsam and castor oil of known strength. Am. Journ. Pharm., 1873, 326; from Cincinnati *Lancet.*

A lot of balsam copaiva in the Western market was found to contain resin and linseed oil. T. N. J.

Balsam Peru.—This article continues to be sophisticated

in the usual manner; castor oil, alcohol, and turpentine may be detected not unfrequently by the usual tests.

Benzoin.—A sample of this gum, examined by Mr. J. H. Schulz, was found, after exhaustion with alcohol, to leave a residue, which, when dried, seemed to be hemlock bark. (Chic. Pharm., 1873, 69.) This would certainly be a strange admixture. Mr. A. C. Curtis, in an inaugural essay, gave the result of an examination of a number of samples, in some of which he found 25 per cent. impurities.

Cardamoms.—Mr. George W. Kennedy, of Pottsville, Pa., reports having received some cardamoms, which he found mixed with orange seeds and unroasted coffee seeds to the amount of 4 per cent. Am. Journ. Pharm., 1873, 389.

Cinchona Barks.—Three bales of damaged and worthless bark were rejected at the New York custom-house during the past year. This is a very small amount of the total importation at this port.

Prof. Maisch, at the pharmaceutical meeting held January 16th, 1872, in Philadelphia, exhibited some bark sold by a New York house as "Calisaya," but having none of its characteristic properties; having a coarsely fibrous liber, covered with a thick, soft cork. A similar, if not the same, article, had been sold by a New York house as "red bark." Am. Journ. Pharm., 1872, 88.

A false cinchona bark, bought as such by a French war vessel during one of its cruises abroad, and afterwards deposited in a naval supply depot for reissue, was found to be devoid of all signs of alkaloids, although very much resembling some kinds of cinchona bark. M. Lemoine, who examined it, thinks it may be derived from a species of cascarilla. Rép. de Pharm., 1873, 181.

Some 300 pounds of East India bark were offered during 1873 to the medical department of the Austrian army. On examining it, Bernatzik found it to contain 5.92 per cent. of alkaloids, while, according to De Vrij, in the usual sorts the amount varies between 1.24 per cent. and 3.45 per cent. The

large amount of alkaloids raised suspicion, and as 3.68 per cent. thereof was found to be soluble in ether, it was concluded that the bark, originally poor and worthless, had probably been sprinkled with a solution of commercial quinoidine in alcohol or acetic acid. Zeitsch. Œst. Apoth. Ver., 1873, 157; see also Pharm. Centralh., 1871, No. 47.

Cacao Butter.—An exceedingly bungling sophistication of this article appeared in the Chicago market in the beginning of 1873, sold by one of the wholesale houses of that city. It turned out to be a mixture of wax and cocoanut oil. T. N. J.

Cypripedium.—Prof. Maisch drew attention to the fact, that two different rhizomes are met with in commerce under the name of Cypripedium or "ladies' slipper." These he afterwards ascertained to belong to Cypripedium pubescens, Willd., and C. parviflorum, Salisb. Amer. Journ. Pharm., 1872, p. 194.

A new admixture has been pointed out since then by Mr. Truckenmiller, namely, the rhizoma of Hydrastis Canadensis; also occasionally senega, and roots of other dicotyledonous plants. Amer. Journ. Pharm., 1873, p. 9; Chic. Pharm., 1873, p. 39.

Dandelion.—The substitution of chicory root is of frequent occurrence. The writer has seen several such lots, and Prof. Maisch showed some so-called "cultivated dandelion root" to be nothing else but chicory. Am. Journ. Pharm., 1873, p. 86.

Elm Bark.—Mr. J. H. Schulz reports having found ryemeal in powdered elm bark. Chic. Pharm., 1873, p. 69.

Ergot.—Fine large rye-ergot is scarce, and a great deal of small-sized ergot is imported, consisting only in part of ergot of rye, and containing also that of barley and oats, and perhaps of other gramineæ. This practice should be discountenanced, especially as the experience of physicians is based almost exclusively upon the effects of the ergot of rye. The refusal to accept any other and the offer of a better price would soon bring all the needed supply of prime rye-ergot.

Extractum Monesiæ.—Some of this extract offered for 50

cents per pound in the Western market, proved to be pure extract of logwood. T. N. J.

Extractum Taraxaci.—A sample of this extract, sold in the West, and obtained from an Eastern manufacturer, was found to be little else than extract of licorice, overheated in order to give it a slightly bitter taste. It is said that this is a sample of thousands of pounds made in this way. T. N. J.

Guaiac Wood.—Guaiac wood containing its proper proportion of resin, seems to have almost disappeared from the market. Mr. J. H. Schulz examined eleven samples obtained from leading drug houses in New York, Philadelphia, Chicago, and Milwaukee, and found all, excepting one obtained in Milwaukee, to be devoid of resin. Chic. Pharm., Sept. 1873.

The rasped guaiac wood sold by druggists is obtained from block and pump makers, and is the shavings or turnings obtained in the manufacture of different articles made from lignum vitæ. The above pointed-out want of resin might be caused by exhaustion by some cheap solvent, as the editor of the Chicago Pharmacist suggests. Another explanation would be, that the resin disappears in the coarse of time during the seasoning of the wood, as is the case to a great extent with pine, in which case fresh wood would necessarily be richer in resin than seasoned wood. (Extract from a letter to Mr. A. E. Ebert.)

Gum Arabic.—Hager has met with gum arabic in fine grains which was adulterated with dextrin. Pharm. Cent., 1873, p. 201.

Honey.—Much of the honey occurring in commerce is spurious. It is made from glucose, or uncrystallizable sugar, flavored by elm leaves and other materials. A great deal of this glucose is made in Europe from potato and other starches; inferior grades are used by brewers and distillers. Drug. Circ., 1872, p. 47.

The writer has been informed that the flowers of the locust tree (Robinia pseudo-acacia) are used to flavor spurious honey.

Jalap.—Much inferior jalap is met with in the market. Most bales contain even in the most favorable circumstances a considerable number of spongy, light, and inert tubers, not to speak of the small size. Fifteen bales of exhausted and damaged jalap were rejected at the custom-house, New York, during the past year. The custom-house reports show that a large proportion of the jalap imported into this country comes from Europe, and only a small proportion directly from Mexico. The European, chiefly English, market absorbs the best lots, and turns the inferior ones adrift over here. The cultivation of jalap is another factor contributing to its gradual deterioration.

Mr. S. H. Ambler, of New York, in an inaugural essay, gives the result of an assay of ten samples of powdered jalap as follows: Percentage of resin found, 16, 13, 11.3, 8.2, 8, 7.2, 6.4, 4.8, 4.5, 3.6.

Kamala.—Dr. R. Kemper has met with kamala in the English and German markets, which yielded from 20.7 to 54.4 per cent. of ash, and he was unable to obtain a better article. During the year 1868 some adulterated kamala was also in the European market, but an article yielding not over 8.7 per cent. of ash could readily be obtained. According to Anderson, pure kamala should not yield over 3.84 per cent. of ash. Arch. d. Pharm., Aug. 1872, p. 118; Am. Journ. Pharm., 1872, p. 488.

Lycopodium.—Prof. B. Lillard has met with a sample of lycopodium, which he found to be adulterated with dextrin. It was of a slightly lighter color, became damp if exposed to air, and betrayed the odor of dextrin on rubbing it with water. It had been received from a jobbing house in New York. Chic. Pharm., Sept. 1873.

Mustard.—It is well known that there is (with one or two exceptions) no pure ground mustard to be had in the market. The usual admixture is starch, or rather flour, it being even asserted that such an addition is necessary to give it enough adhesiveness to be formed into paste, either for culinary or remedial purposes. The usual coloring-matter employed is

turmeric, the presence of which may be ascertained by boracic acid; and the acridity is heightened by capsicum. Among a large number of mustards only "Frueauf's Russian Mustard" was found pure. Am. Journ. Pharm., 1873, p. 233.

(A.) *Fixed Oils.—Castor Oil.*—A "very choice" sample of common or wagon castor oil, sold in the Chicago market, was found to contain 5 per cent. of castor oil; the balance was a very poor quality of whale oil. T. N. J.

Linseed Oil and Refined Rape Oil.—Rosin oil is a very common adulterant. Messrs. Blundell, Spence & Co. furnish the following instructions for its detection:

The specific gravity of linseed oil should never exceed 0.935; if higher, the presence of rosin oil (the specific gravity of which is 0.989) may be suspected and ascertained by pouring into a bottle first some of the suspected oil, then on top of this, without disturbing the surface, some linseed oil previously known to be pure; on slowly mixing the two layers there should be no wavy streaks visible in the liquid. Or, place 10 to 20 drops of pure linseed oil on a glass plate resting on white paper (or on porcelain), and near by 10 to 20 drops of the suspected oil; add to each 1 drop of sulphuric acid. On the pure oil a dark-brown spot slowly forms; on the adulterated, a dark reddish-brown spot appears quickly, retaining its red color for a long time, and having a scum over it.

To detect mineral oil in refined rape oil (colza oil) the same two methods may be employed; but as refined rape oil has a higher specific gravity (0.914) than mineral oil (0.902), the pure oil must be placed in the bottle first. On top of this is poured the suspected oil; on slowly mixing, the liquid must remain free from wavy streaks. A drop of sulphuric acid placed upon pure rape oil forms a pale yellow spot slowly, with dirty orange streaks; but on the spurious oil a reddish-brown spot is quickly formed.

A good method to detect mineral oils in animal or vegetable oils, or *vice versâ*, is to saponify the oil by soda solution, and to treat the soap, after concentration, with ether or petroleum benzin; the soap remains undissolved [some soaps are soluble

in ether.—Ch. R.], while the mineral oil is dissolved out. Am. Chem., May, 1872, from Oil Trade Review; Am. Journ. Pharm., 1872, p. 311.

Neatsfoot Oil.—The Western (Chicago) market seems to be a fruitful field for enterprising genius. Some "neatsfoot" oil has been met with there, consisting of kerosène 1 part and neatsfoot oil 2–3 parts. Chic. Pharm., 1873, p. 31.

Olive Oil.—A general impression prevails, and no doubt justly, that it is next to impossible to obtain absolutely pure oil. The chief adulterants are well known to be cottonseed oil and poppyseed oil. In addition to these groundnut oil (from Arachis hypogæa) and oil of sesame are used in its adulteration. A method to detect the former, by A. Renard, based upon the detection of arachidic acid, may be found in Comptes Rend., Dec. 4, 1871. Am. Journ. Pharm., 1872, pp. 81, 541.

Palm Oil.—According to Tissandier, this oil is adulterated by the admixture of water, as much as 50 per cent. Hager (Pharm. Centralh., 1871, No. 32) reported having found as much as 57.5 per cent. Wittst. Viertelj., 1872, p. 422.

"*Neutral Oil.*"—The Am. Journ. Pharm., 1873, page 384, contains the following, on which further comment is superfluous:

The following circular received by us exhibits a surprising degree of barefacedness and of confidence in the dishonesty of the wholesale drug trade. We have no means of ascertaining to what extent the circular has been distributed or was responded to; but we would advise all interested to be on the lookout for adulterations by "neutral oil." What kind of oil this latter article is we are unable to say, but should be glad to receive a sample for experimental purposes. Leaving out the names, &c., the circular reads as follows:

Western Oil Company, Manufacturers of Animal and Vegetable Oils, Car and Axle Grease.

SPECIAL CIRCULAR TO WHOLESALE DRUGGISTS.

GENTLEMEN: We call your attention to our "Neutral Oil," made expressly to manipulate lard oil, raw and boiled linseed, refined cottonseed oil, and cas-

tor oils; also used extensively for wetting down wool. It does not stain. One trial will convince you; it will enable you to make large profits on articles that heretofore hardly paid to handle. No orders filled less than a barrel. Prices as follows: One barrel, 48 cents per gallon, &c. Our prices are firm at above quotations. Trusting to receive a sample order. we, &c.

(B.) *Volatile Oils.—Oil of Almonds.*—The substitution and admixture of the artificial oil is as common as ever. The mode of detection, by solid caustic potassa, may be found in Am. Journ. Pharm., 1857, 544. U. S. Dispensatory, 13th edition, p. 589.

Oil of Chamomile.—A substitute for this oil is sold in the Western market, consisting of oleum chamomillæ infusum (or coctum), which is merely olive oil impregnated with the volatile oil of one-tenth of its weight of the flowers of Matricaria chamomilla (T. N. J.). These oils are only used by German practitioners.

Oil of Eucalyptus.—The oil of E. globulus is said to be used as an adulterant of other volatile oils; it has a delicate odor, which may be easily covered by bergamot, and other more powerful perfumes. See Am. Journ. Pharm., 1872, 189.

Oil Neroli.—Some of this oil, which was offered by a wholesale house of Chicago for $4.50 per pound, was found, on examination, to be Chiris's extract of orange flowers, No. 24. T. N. J.

Oil of Peppermint.—The adulteration of this oil with castor oil (25 per cent.) has already been reported by Mr. Saunders in the Proc. Am. Pharm. Assoc., 1871, 62. See also Can. Pharm. Journ., vol. 5, No. 3, 110. Since then this fraud seems to have assumed yet larger proportions. Mr. Shuttleworth has found a sample of it to contain 32.72 per cent. of oil of peppermint, 38.18 per cent. of castor oil, and 29.10 per cent. of alcohol. He inclines to the belief that the oil examined by Mr. Saunders must likewise have contained alcohol, as otherwise it would have been of too thick a consistence. Am. Journ. Pharm., 1872, 170.

Oil Santal.—A quantity of oil of santal in the Chicago

market proved to be a mixture of equal parts of castor oil and oil of santal. T. N. J.

Alcohol in Volatile Oils.—The following method of Bœttger furnishes a ready means of detecting this most common sophistication. Equal parts by bulk of ethereal oil and anhydrous glycerin are shaken together; after separation any increase in the bulk of the glycerin is due to alcohol. The same method may be used for the detection of alcohol in ether. Neues Rep. f. Pharm., 1872, 566.

Fatty Oils in Volatile Oils.—Ferd. Rhien proposes, as an improved test, to pass steam through a small sample of the oil until the volatile oil, which has distilled over, ceases to increase in bulk; then on agitating the residue in the flask, through which steam had been passed with ether, the adulterant will be left behind on the evaporation of the ether. Neues Rep. f. Pharm., 1872, 502–505; Am. Journ. Pharm., 1872, 490.

Water in Volatile Oils.—A certain number of volatile oils as occurring in commerce, always contain a small amount of water, namely, oils of lavender, cloves, spike, cinnamon, rosemary, sassafras, juniper, lemon, and bergamot. Traces only of water are found in oil of gaultheria. Anhydrous are oil of turpentine, oil of rue, oil of amber, and oil of cedrat. Journ. f. Prakt. Chem., 6, 159.

Oil of Cade.—This is found frequently adulterated with common tar and oil of juniper. T. N. J.

Opium.—Forty cases of opium were rejected at the New York custom-house during the past year on account of low percentage of morphia; the latter only assaying 5¼ to 6¾ per cent.

Some cases of so-called Persian opium were likewise rejected at the same place. This consists of globular masses resembling in this case Smyrna opium, but devoid of the leavy envelope, and exhibiting in the interior a brownish-black, smooth, homogeneous texture, evidently an inspissated extract of the poppy capsule; on kneading it the hands are

stained with oil, probably from the seeds not having been entirely separated from the capsules before making the extract.

Some Persian opium has occurred in the French market which was entirely devoid of any morphia. Journ. de Pharm. et de Chim., July, 1873, 40.

Righini reports a sophistication of opium consisting of an admixture of small roundish balls of a pale yellow color (nature undetermined), and dark-green leaf fragments to the amount of 30 per cent.; the latter he believes were tobacco leaves (?). The watery solution assayed only 4 per cent. morphia. Annali di Chim., 1872, 48; Witt. Viertelj., 1872, 445.

Mr. J. H. Schulz has received some opium from a New York house, which contained 20 per cent of sand. Chic. Pharm., 1873, 69.

A most common method of sophistication is to cause the gum to take up an extra quantity of water, either by exposing it in a very damp cellar, or by steaming it carefully. This can be done without interfering with the original shape or appearance of the gum, and promises profit at little risk.

Orris Root.—Powdered orris root is very frequently adulterated; a dilution of about 25 per cent. is scarcely detected by a deficiency of odor. Mr. J. H. Schulz reports having found rye meal in it in large quantities. Chic. Pharm., 1873, 69.

Powdered Drugs.—The fact of the unreliability of a great many powdered drugs sold in the general market has been so often repeated and so well established, that it would be useless to tell the story over again. The number of substances used in these diluting processes is endless. The following list was furnished to Mr. T. N. Jamieson by a person who had had the opportunity of becoming intimately acquainted with the secrets and mysteries of drug-powdering:

Capsicum is adulterated with corn and brickdust, opium with roasted acorns, licorice and ginger with corn, elm bark with rye flour, gum arabic with wheat flour, cream tartar with terra alba, cinchona with exhausted bark, pepper with common dust and sweepings of the mill, cinnamon with mace-

rated bark (?, in the writer's experience flour or starch plays a great rôle in grocers', and also druggists' powdered cinnamon), mustard with corn and gamboge (?), cantharides with burnt acorns, rhubarb with corn and gamboge.

Some of the adulterants mentioned in this list may have been made use of occasionally, but scarcely as a regular practice. Powdered rhubarb, for instance, is now believed to be scarcely falsified, at least to any great extent, while it has become customary to mix low grade with high grade powders,—in the case of rhubarb, by grinding up all borings and clippings, together with other unsalable pieces.

Saffron.—Prof. Maisch examined three different samples of so-called "African saffron," two of which proved to be the usual substitute, namely, the florets of Carthamus tinctorius. The third, however, was of a different origin; it consisted of the corolla of a plant probably belonging to the nat. ord. Scrophulariaceæ. (Am. Journ. Pharm., 1872, 110.) These flowers were afterwards referred by J. R. Jackson, Curator at Kew, to Lyperia crocea, Eckl., a scrophulariaceous plant of Southern Africa. They are called in the Cape district "geele blœmetjes" (yellow flowers), and resemble saffron in taste and smell; are stomachic, and yield a dye of a fine orange color. Pharm. Journ. and Trans., May, 1872, 904; Am. Journ. Pharm., 1872, 307.

Hager reports having received some Persian saffron, in cakes, which contained only a few stigmas of crocus, exhaled a fatty odor, and yielded to benzole a yellow color, which genuine saffron does not; nor did it answer to any other tests for true saffron. Ether extracted a thick fixed oil, which Hager thinks was olive oil, colored with curcuma. Pharm. Centralhalle, 1872, 364.

Wax.—Ceresin, a peculiar substance, partaking of the properties of paraffin, obtained from the ozokerite, or fossil wax of Galicia, by the agency of Nordhausen sulphuric acid, has been used as a substitute for white wax in Europe. (Pharm. Centralhalle, 1872, 371; Am. Journ. Pharm., 1873, 11.) Yel-

low wax also occurred in trade, which was composed of impure paraffin colored with curcuma. Pharm. Centralh., *l. c.*

II. CHEMICALS.

Acetic Acid.—Mr. Ed. Smith has found in a sample of this acid some manganese and iron (2.67 grains in 1 pint imp. meas.). Chic. Pharm., 1872, 232, from Pharm. Journ. and Trans.; Am. Journ. Pharm., 1872, 493.

Vinegar is found to contain very frequently an undue amount of sulphuric acid and sulphates; a small amount of either, however, is not objectionable, especially of the former, which contributes to its conservation. The direct employment of the baryta test is too delicate for ordinary purposes. Mr. J. T. King has revived Chevalier's method of separating the sulphates by the addition of alcohol to a highly concentrated portion of the vinegar, and to determine the free sulphuric acid in the filtrate. Am. Journ. Pharm., 1872, 159.

A death in Liverpool was ascribed to vinegar found highly adulterated with hydrochloric acid. The editor of the Pharm. Journ. and Trans. (April, 1873, 798), while denouncing the adulteration, yet doubts the propriety of ascribing to it the above recorded death.

Ammonium Sulphate.—Some English common sulphate of ammonium, which is used as a fertilizer, and much employed on the continent of Europe, was found to have a very destructive action on the soil. It contained as much as 30.4 per cent. of nitrogen, and should therefore have been of value. But even in combination with superphosphates it had a very destructive effect. It was finally ascertained to be ammonium sulphocyanide. Drug. Circ., 1873, 91.

Antimony, Sulphide.—An article under this name occurred in the Western market during the last year, which proved to contain not a trace of antimony, and was supposed to be galena. (T. N. J.) Mirus found a quantity of sand in some commercial sulphide. Wittst. Viertelj., 1872, p. 249.

Bismuth.—The usual impurities found in this metal are

arsenic, antimony, copper, and lead; the latter, however, seldom. Mr. Ed. Smith, in commenting on the separation of copper, finds Hugo Tamm's method (Chem. News, vol. 25, p. 100), by fusion with potassium sulphocyanate, to give the best results. Nitre will remove the copper only after repeated fusions. (See Schacht's paper in Pharm. Journ. and Trans., April, 1868; Amer. Journ. Pharm., 1872, p. 494, from Pharm. Journ. and Trans., Sept. 14, 1872.)

Bismuth, Subnitrate.—M. Bultot has found nitrate of ammonium in some German subnitrate. Rép. de Pharm., 1873, p. 136. C. Ekin detected the presence of silver in a sample. Pharm. Journ. and Trans., Nov. 1872, p. 381.

Bromine.—The presence of cyanogen in commercial bromine is said to be not very uncommon. A new method for its detection has been given by T. L. Phipson, which consists in allowing the suspected bromine to act on iron-filings in the presence of water, filtering while hot, and allowing to stand; after about forty-eight hours all the cyanogen will have separated out as ferricyanide of iron (Berlin blue). Drug. Circ., 1873, p. 155, from Chem. News.

Butyric Acid and Ether.—Burgemeister states that these two substances are often found very impure in commerce.

Butyric ether of a reputable firm contained water, alcohol, acetic ether, propionic ether, and an amount of caproic ether almost equal to the pure butyric ether present.

Butyric acid of the same firm contained one-third of its weight of caproic acid. Wittst. Viertelj., 1872, p. 605.

Chloralhydrate.—With the exception of some chlorine compounds, this article is met with tolerably pure. Now and then we find a lot which has been damaged, but we do not hear of any intentional adulterations. The writer has in his possession a lot of chloralhydrate, which contains traces of manganese, on which he will report in future. See also Amer. Journ. Pharm., 1873, p. 296.

Citrate of Iron and Quinia.—Scarcely two samples of differ-

ent manufacturers are alike either in quantity of alkaloid, or in solubility; part of quinia is replaced by cinchonia; and in some cases the solubility is increased by employing the ammonio-citrate of iron. Mr. P. W. Bedford examined six samples, of which only one was not very readily soluble, hence probably made strictly according to the U. S. Pharmacopœia. The samples assayed of quinia: 4.3, 8.2, 10, 11.5, 10 (and 2 per cent. of cinchonia), 7.7 per cent. (and 1.5 per cent. of cinchonia). Drug. Circ., 1873, p. 56.

Mr. A. W. Gerard examined eight samples of English manufacturers, and found in them, 5, 8, 9, 10, 12, 12, 16, 16 per cent. of quinia. (The British Pharmacopœia requires 16 per cent.) Pharm. Journ. and Trans., March, 1873, p. 763.

Corrosive Sublimate.—M. Bultot, of Liège, met with a specimen of this which was not entirely soluble in water, ether, and alcohol; the solutions in the two latter liquids had a reddish color. He concludes that the salt was most likely from some of the residuary liquors of anilin-color factories. Journ. de Pharm. d'Anvers, June, 1873, from Archives Méd. Am. Journ. Pharm., 1873, p. 397.

Cream of Tartar.—The quality of this substance, as found in the market, is steadily deteriorating; the amount of tartrate of lime is augmenting in the crystals, and it is next to impossible to obtain a powder which is tolerably pure. Some of the latter are of so inferior a quality as to scarcely deserve the name.

Mr. W. G. Rothe, in an inaugural essay (New York, 1873), gives the results of an examination of seventeen samples of ground cream of tartar obtained from different sources. The following table gives the results:

Number of Sample.	Cream of Tart., Per cent.	Impurities, Per cent.	Impurities consist of		
			Tartrate of Calcium.	Carbonate of Calcium.	Terra Alba.
1	71.30	28.70	18.60	10.10	....
2	63.05	36.95	20.95	16.00	....
3	93.60	6.40	6.40	....	....
4	93.[illegible]5	6.35	6.35	....	....
5	85.00	15.00	15.00	Trace.	....
6	90.00	10.00	10.00	....	....
7	90.00	10.00	10.00	....	....
8	94.75	5.25	5.25	....	....
9	93.45	6.55	6.55	....	....
10	56.95	43.05	43.05	....	Trace.
11	93.13	6.87	6.87	....	....
12	89.90	10.10	10.10	....	....
13	89.95	10.05	10.05	....	....
14	89.45	10.55	10.55	....	....
15	7.10	92.90	....	....	92.90
16	88.95	11.05	11.05	....	....
17	10.50	89.50	....	....	89.50

The specimens were obtained mainly from respectable dealers, three from wholesale drug-houses, seven from pharmacists, and the remainder from grocers. Nos. 1 and 2 show a large percentage of carbonate of calcium, evidently an admixture in the crystals, and most likely placed there by the producer. The high character of the importer and the integrity of the miller preclude any idea of fraud on their part. The mode of examination consisted in dissolving a weighed sample in water with addition of ammonia to faint alkaline reaction, transferring the residue to a tared filter, washing and drying at 120° Fahr. (total impurity). The separation of tartrate and carbonate of calcium was effected by dissolving out the tartrate with solution of potassa. Finally, tartrates and carbonates were subjected to their appropriate tests. The insoluble residue in Nos. 15 and 17 (and 10) was boiled with carbonate of sodium until dissolved, when the resulting solution was proved to contain sulphuric acid, and the residue left was found to be carbonate of calcium, showing that sulphate of calcium had been the adulterant.

Prof. E. Scheffer, in a letter addressed to the writer, states that he has met with samples of cream of tartar, one containing carbonate, the other sulphate of calcium, a little bitartrate of potassium and some starch or flour. The first sample was of a grayish appearance, of tolerably good taste, but effervesced in the mouth. When put into water it effervesced strongly after a short time. On heating it, it melted before charring and left a black porous mass, which being thoroughly washed with water, effervesced strongly on addition of HCl. Treated with ammonia in excess, 120 grains of this cream of tartar left 19 grains of insoluble matter, which turned out to be carbonate and tartrate of calcium. The total amount of insoluble residue was about 16 per cent.; if 4 per cent. of this are taken for tartrate of calcium, there are left 12 per cent. of carbonate of calcium. The second sample had an earthy, bitter, and only slightly sour taste. Exposed to a red heat it did not melt before charring; the residue was a grayish-black powder, which on access of air readily burnt white; acid added to the gray powder evolved HS. The watery solution of the salt yielded on evaporation a large quantity of crystalline sulphate of calcium; the mother-water evaporated to dryness, and heated to redness, melted before charring and exhaled the characteristic empyreumatic odor of burning tartaric acid; it yielded an ash, consisting of carbonate of calcium. The portion left undissolved by water, after having been boiled with water, yielded a dark-blue color with iodine.

Mr. George W. Kennedy examined some cream of tartar for a merchant, and found it to contain 5 to 6 per cent. of tartrate of calcium, 8 per cent. of ammonia-alum, and 2 per cent. of starch. Amer. Journ. Pharm., 1873, p. 258.

Mr. J. M. Merrick of Boston, reports having received a sample from a drug broker for examination, which was found to contain 77 per cent. of alum. Amer. Chem., Nov. 1872, p. 180.

Creasote.—Much confusion exists in reference to the distinguishing tests between creasote and carbolic acid. There is no doubt that a great deal of carbolic acid is made to pass

under the name of creasote, and mixtures of the two are most likely quite as common. The best test hitherto published is that of Prof. Flückiger, which may be found in American Journal of Pharmacy, 1872, p. 465. Morson's test by glycerin has failed in many hands; see American Journal of Pharmacy, 1872, pp. 335, 503, *seq.* The perchloride of iron test (see Ibid., 1872, p. 466; 1873, p. 269) is only applicable to the detection of carbolic acid (with which it strikes a blue color) in creasote, but cannot prove the presence of creasote in carbolic acid.

[An intentional sophistication of carbolic acid with creasote is not very likely to occur.]

Gallic Acid.—Hager reports having found iron in a specimen of it, masked by the addition of about 0.8 per cent. of oxalic acid. On dissolving it in water, containing an alkali, the characteristic bluish-black coloration made its appearance. Pharm. Centralh., 1872, No. 18; Amer. Journ. Pharm., 1872, p. 260.

Glycerin.—This substance is very rarely found entirely pure, chlorides, ammonia, oxalic acid, soda, and sulphuric acids, occur in different lots, in greater or lesser quantities, but in only a few cases in such amounts as to preclude its employment for medicinal purposes.

Mr. Edward Smith examined a number of samples of glycerin, pretending to the title of "pure" or "equal to Price's," which had a decided odor, or contained metallic impurities. One sample contained a notable quantity of a sulphur compound, giving off HS on warming. Chic. Pharm., 1872, p. 232; from Pharm. Journ. and Trans.

A. H. Mason, in an extensive paper on the quality of commercial glycerin, states that he had found slight impurities in a number of the samples, but only in a few cases ("crude glycerin," used for manufacturing purposes) of such amounts as to render them unfit for medicinal purposes. He considers no glycerin as sufficiently pure, unless it remain unaffected by nitrate of silver, sulphuric acid, oxalate of ammonium, or sunlight, and be perfectly free from smell after undergoing

those tests. Chem. and Drug., April, 1873; Am. Journ. Pharm., 1873, p. 276.

The writer has observed a peculiar property of Sarg's concentrated glycerin, namely, of covering the bottle containing it, and which is in constant use, with a violet-bluish film, whenever any of the glycerin happens to get on the outside of the bottle, and is allowed to remain there for some time. He has not had the opportunity yet of examining this peculiarity, but hopes to do so in the future.

Iodine.—Mr. Remington reports having found in a sample of iodine, as much as 25 per cent. of sawdust. It is hoped that this may be rather an accident than a fraud. Am. Journ. Pharm., 1872, p. 278.

Wittstein found in a specimen examined by him, 28.75 per cent. of iodide of cyanogen. Chic. Pharm., 1872, p. 43.

According to Wanklyn, commercial iodine contains on an average: iodine, 88.61 to 76.21 per cent.; chlorine, 0.52 to 0.88 per cent.; ash, 0.72 to 1.11 per cent.; water, 10.15 to 21.80 per cent. Am. Chem., April, 1872, from Mechan. Mag.; Am. Journ. Pharm., 1872, p. 270.

Iron, reduced by H.—The writer has had some experience with this substance, and has been seriously annoyed on different occasions by failures in certain pharmaceutical processes. One of the largest manufacturing houses of this country have put an article into the market, of which only 70 per cent. is soluble in acids, the remainder is pure carbon.

Liquor Ferri Chloridi.—The writer's attention has been drawn by several New York pharmacists to samples of this article, obtained from a wholesale house of this city (N. Y.), some of which contained an undue and injurious excess of nitric acid, and others which were not fully oxidized, of a brownish-black color, and constantly depositing a sediment.

Lithium, Carbonate.—Schlagdenhauffen has found this substance contaminated with 3.5 per cent. of sulphate of potassium, 3.7 per cent. of chloride of potassium, and 6.5 per cent.

of sugar of milk. Journ. de Pharm. et de Chim., July, 1873, p. 37.

Magnesia.—Mr. R. V. Mattison has met with some so-called "heavy magnesia," which he had reason to suspect was adulterated, and, on analysis, found it to consist of Rochelle salt, mixed with magnesia, and imported into our market as "heavy magnesia." Am. Journ. Pharm., 1873, p. 13.

Carbonate of magnesium and calcined magnesia are often met with contaminated with iron. Arch. d. Pharm., Jan. 1872, p. 22.

Magnesium, Citrate (*solution*).—The strictures made heretofore by various reporters, regarding the sophistication of this popular aperient, are fully applicable yet at the present day. The substitution of tartaric for citric acid, and of soda for magnesia, is of frequent occurrence. Superior advantages are claimed for the effervescing solution of tartate of sodium (see Dr. Miller's paper in Am. Journ. Pharm., 1873, p. 289), and it is quite proper to test its merits in comparison with the other; but then it must be sold under its own name, and not be made to pass for citrate of magnesium, as is so frequently the case.

Mr. Bultot has examined some granular effervescing citrate of magnesium, which consisted likewise of tartaric acid and bicarbonate of sodium, in variously-sized granules, evidently made with little care. Rép. de Pharm., 1873, p. 135.

Mr. M. E. Leger wishes to facilitate the employment of tartaric acid in combination with magnesia, by preventing the formation of insoluble tartrate of magnesium. This he proposes to do by heating the tartaric acid to 170° C., when it fuses [its fusing-point is higher], and is converted into metatartaric acid, which forms a soluble salt with magnesia, tasteless, and in his opinion even more certain in laxative effects than the citrate. Répert. de Pharm., 1873, p. 340.

Manganese, Black Oxide.—Very inferior lots are offered in the market; it is quite difficult to obtain an oxide of high

test. Occasionally a lot is met with, so deficient in available oxygen, as to make it entirely worthless. T. N. J.

Ozonized Water.—The liquid placed in the market under that name by Krebs, Kroll & Co., of Berlin, has been analyzed by Behrens (Zeitschr. Œst. Apoth. Ver., 1873, p. 229), and found to be a dilute solution of hypochlorous acid in water. Godeffroy confirms this statement (Ibid., 314). Different results had been obtained by Boettger. At any rate, the substance does not deserve the name. Am. Journ. Pharm., 1872, p. 396; 1873, p. 352.

Phosphate of Calcium.—Mr. Duquesnel reports having frequently found lead in this substance, in the form of oxychloride (0.5 per cent.). He ascribes it to the use of leaden vessels in dissolving the bones in hydrochloric acid. Journ. de Pharm. et de Chim., Sept. 1871; Am. Journ. Pharm., 1872, 12.

Potassium, Bromide and Iodide.—The separation and estimation of bromides and iodides, when present together, is an operation for which a number of processes have been proposed, only a few of which lead to tolerably accurate results. Many authors are very prolix in giving methods for the separation and estimation of small quantities of Cl in the presence of I or Br, or of small quantities of I in the presence of Br; while for the separation of small quantities of Br in the presence of much I, only few generally useful methods are known. It is certainly useful to know how to detect a small quantity of iodide of potassium in bromide; but such an admixture is now very rare and merely an accident, never a fraud. The detection of small quantities of bromides in the presence of iodides is of especial interest to the pharmacist; but the processes hitherto proposed for this purpose (with the exception of that by chloride of palladium, which is too expensive for general use) have yielded very varying results in different hands, and require renewed investigation by repeated careful analyses of mixtures of iodides and bromides of known percentage.

Mr. Toussaint, of New York, has handed to the writer a

sample of iodide of potassium obtained from a prominent manufacturing house of that city, which, on assay, he had found to contain 9 per cent. of bromide. Another sample submitted to the examination of another expert, yielded a percentage of bromine somewhat larger than the other. The writer is informed that a large lot of this iodide has been floating about the market for some time, having been sent to Philadelphia and returning again to New York.

Bromide of potassium is found generally pure. Mr. Ed. Smith, however, found in a sample 5.2 per cent. chloride of potassium. Chic. Pharm., 1872, 232; from Pharm. Journ.

According to M. Adrian, the bromide of potassium found in the French market is most commonly impure. Among ten samples obtained from the principal French manufacturers, only one was found pure; the others contained 10 to 15 per cent. impurities; one even contained 35 per cent. These were carbonates, chlorides, iodides, and sulphates. Pharm. Journ. and Trans., Sept. 30, 1871; from Journ. de Ph. et de Chim., New Rem., 1872, 201.

Potassium, Chlorate.—Godeffroy met with an impure salt, which was in powder (the crystals are always pure), and was found to contain manganese and traces of iron; the amount of the former corresponded to 2 per cent. of binoxide of manganese. Zeit. Œst. Apoth. Ver., 1873, 297.

Mr. G. Bruylants found chlorate of potassium adulterated with bicarbonate of potassium; the quantity of the latter amounted to 15 per cent. Belg. Journ. de Pharm., Nov. 1872.

Potassium, Sulphate.—This substance, when administered in very large doses, produces sometimes very dangerous symptoms, which may be caused either by an overdose taken or by accidental impurities in the commercial sulphate of potassium. Mr. Chevalier has found in different samples of this salt, sulphate of zinc, sulphate of copper, bichloride of mercury, binoxalate and arseniate of potassium. As the sulphate of potassium is mostly obtained as a by-product, these latter substances found in it cannot be called adulterations, but are

accidental impurities, the possible presence of which ought to put every druggist on his guard. Bull. S. R. de Pharm., Sept. 1872.

Quinia and its Salts.—Prof. Maisch has learned quite lately that the fictitious French quinia (muriate of cinchonia), is largely sold in the South, where pharmaceutical literature has but little penetrated. It is almost certain that the factory is in New York, and it is hoped that such steps will be taken as to put an end to this nefarious cheat.

There is reason to believe that the substitution of other (cheaper) cinchona alkaloids for quinia is not a very rare occurrence. The writer is aware of several instances which have occurred in the neighborhood of his city, in which that fact had been proved beyond a doubt. Notwithstanding this, there can be no justification for a wholesale attack upon pharmacists in general, such as has occurred not very long ago, and which was based upon hearsay reports of irresponsible persons. Our Association has proved that its code of ethics cannot be infringed upon with impunity, and will doubtless proceed against any member, if the charges brought against him are sustained. Those who are not members of our Association, or of other more local bodies, can only be reached through the courts of law.

There is a case reported in Pharm. Journ. and Trans., May, 1873, p. 897, where out of six dealers from whom quinia was bought, one sold quinidia instead; he afterwards brought forward the excuse, that "he could not make a living by selling pure drugs." He was fined under the Adulteration Act.

J. Biel has met with sulphate of quinia, alleged to be of German manufacture, which was adulterated with 10 per cent. anhydrous sulphate of sodium. Chem. Centralbl., 1872, No. 40, from Pharm. Zeit. f. Russ., 11, p. 367; Am. Journ. Pharm. 1872, p. 540.

Mr. Theodore Louis, of New York, has sent to the writer a sample of muriate of quinia, obtained from one of the largest manufacturing houses in Philadelphia, which was found to contain 6 per cent. of sulphate.

Several fatal cases have lately occurred in Europe from the administration of quinia salts, which were contaminated with morphia salts, either by a mistake in labelling at the factory (this, however, was afterwards disproved), or by carelessness. To recognize morphia in the presence of quinia, several tests have been recommended. Hager's test (a modification of one proposed in Schweiz. Wochensch. f. Pharm.) is as follows: Five cubic centimetres of a saturated solution of ferricyanide of potassium are mixed with 20–25 cubic centimetres of water; 10–15 drops of a solution of ferric chloride are added, and finally 5 drops of pure hydrochloric acid. The mixture must be clear, and brownish or yellowish-green. A small portion (0.5–0.1 gramme) of the suspected quinia salt is placed in a test-tube, a few cubic centimetres of the reagent poured upon it, and the tube shaken; if after five minutes no blue color has developed, morphia is absent. Tannate of quinia cannot be examined in this way. Pharm. Centralh., 1872, p. 369; Am. Journ. Pharm., 1872, p. 540.

Flückiger's interesting investigation on the thalleiochin-reaction has shown, that the latter may be also employed for the detection of morphia. A pure solution of morphia containing less than $\frac{1}{1000}$, shows no change after the addition of chlorine-water and ammonia; in mixture of quinia and morphia, containing less than $\frac{1}{1000}$ of morphia (or if diluted, enough to make it so), the green color of thalleiochin alone appears; in mixtures of quinia and morphia, containing more than $\frac{1}{1000}$ of morphia, the thalleiochin turns at once brown. Arch. d. Ph., Aug. 1872, p. 116; Am. Journ. Ph., 1872, p. 257.

Sodium, Sulphovinate.—Mostly all samples of this salt met with in trade contain variable amounts of sulphates. Unless the salt is quite dry, it is very liable to deteriorate. The same experience has been made by Mr. Bussy (see Journ. de Pharm. et de Chim., April, 1873, p. 312).

Syrupus Ferri Iodidi.—Prof. Attfield reports having found in a sample of this syrup a number of golden crystals of iodide of lead. Mr. Williams, who had found the same impurity, ascribed it to the iron-filings, while Mr. Umney traced it to

the employment of crude iodine. New Rem., July, 1873, p. 447, from Pharm. Journ. and Trans.

Tartaric Acid.—Klingelhoeffer has examined a large number of samples of this acid, and among all of them he found only one free from lead. The contamination of tartaric acid with lead had already been pointed out by others (see Neues Jahr. d. Pharm., 33, No. 1). In order to detect the lead in tartaric acid as well as in citric acid, it is not sufficient to pass sulphuretted hydrogen through it; they must first be neutralized with ammonia. Zeit. Œst. Apoth. Ver., 1873, p. 154.

Tinctura Ferri Chloridi.—It is a well-known fact that concentrated watery solutions of ferric salts, like the liquor ferri chloridi, discharge their color very much on dilution with water, while the addition of alcohol scarcely diminishes the intensity of the color. The writer discovered some years ago that some samples of this tincture which came to his notice did not contain any alcohol whatever, and still had a deep brown color; on analyzing the solution it was found to contain iron, hydrochloric and acetic acid, and potassa, showing that the liquor ferri chloridi had been diluted with water instead of alcohol, and a little acetate of potassium added to bring out the color. There is reason to believe that this trick is not unknown among the unconscientious portion of the fraternity.

Zinc, Carbonate, has occurred in the Western market, according to Mr. Jamieson, adulterated with carbonate of calcium. T. N. J.

III. MISCELLANEOUS SUBSTANCES.

Albumen.—Ovalbumen, which commands a higher price than seralbumen, has been found adulterated with gum, dextrin, flour, and syrup. Pharm. Centrahalle, 1873, 145.

Artemisia Ludoviciana, a simple and feeble aromatic bitter, has been clothed in the pretentious garb of the "Chinese ague cure," said to cure fever and all the ills flesh is heir to. Am. Journ. Pharm., 1872, 295.

Butter.—A firm has been established in New York for the manufacture of artificial butter. The substance is said to be scarcely distinguishable from genuine butter, and to cost less than one-half. It remains to be seen whether its nutritive power, manner of preparation, and actual constituents entitle it to any claim as an article of food.

China-Root.—There are two "China-roots" known; one is the root of Smilax glabra, Roxb. (not S. China, L., as formerly supposed; see Am. Journ. Pharm., 1873, 266); the other is the Chinese pe-fa-lie, and bears in Europe the name "radix chinensis albi;" it grows like a fungus on the roots of fir trees, and also separate. The latter had been substituted in the London market for the former. Pharm. Journ. and Trans., March, 1873, 762.

Chocolate, of which enormous quantities are used in France, and which is becoming rather a favorite in this country, has been found adulterated by the addition of dextrin, flour, starch, gum arabic, minium, ochre, cinnabar (?), cacao-shell powder; storax or balsam of Peru had been used as a flavoring instead of vanilla; vegetable and even animal fats were substituted for butter cacao, and in some samples powdered cantharides were found, evidently placed there for criminal purposes.

Coffee.—A green powder, destined for coloring inferior sorts of coffee, was found to contain (according to the Medical Gazette) 15 parts Prussian blue, 35 parts chromate of lead, 35 parts gypsum, alumina, &c., and 15 parts water. Wittst. Viertelj., 1872, 441.

Colors, Poisonous. — Dr. Hirt, of Breslau, has recently again called attention to the increasing use in trade of poisonous colors, especially those containing arsenic and lead. Confectioners, stationers, toy dealers, and flowermakers often employ such papers. Some wrappers of chocolate and bon-bons were found to contain 28 grains of lead per whole sheet, making about 3 grains of sugar of lead for every tablet of chocolate, and 1½ grains for every bon-bon. Lond. Med. Rec.; New

Rem., 1873, 468. Letter envelopes were found colored with Schweinfurth green. Buchn. N. Rep., 1873, 166. Dark and light rose-colored letter-paper is stained with arsenical fuchsin residues. Wittst. Viertelj., 1872, 422.

Colors, Anilin.—Dr. W. H. Wahl examined some fuchsin which consisted entirely of sugar crystals saturated with the coloring matter. Wood fibre is also used for the same purpose. Ether or absolute alcohol separate the coloring-matter from the sophistication. Journ. Frank. Inst., March, 1872; Am. Journ. Pharm., 1872, 173.

Prof. Gintl has made a similar observation, having found in different specimens 15 to 82 per cent. of sugar. Polytech. Notizbl., No. 10, 1872.

Corks.—It has become a common practice in England to prepare used corks by washing and paring, and to resell them as new. These corks were formerly used only for bottling liquids like ink, &c; lately, however, they have been sold to bottlers of wine, ale, and other beverages. This practice should be discouraged, as it might lead occasionally to serious accidents. Pharm. Centralhalle, 1873, 262; from Der Techniker.

The writer is informed that the same practice obtains here.

Fenugreek.—Mr. J. H. Schulz reports having received some of this substance, which proved to be a mixture of ground oil-cake, corn meal, and a small quantity of fenugreek. Chic. Pharm., 1873, 69.

Milk.—From a very large number of analyses of milk, made under the Adulteration of Food Act in England, it was found that water was the only adulterant. Chic. Pharm., 1873, 40; from Ph. Journ. and Trans.

Pepper.—Bouchardat examined a large number of specimens of ground pepper, and found a number of them adulterated. The admixture most frequently detected was the dried and ground parenchyma of potatoes, which is left as a residue in the manufacture of starch; he found besides lentil

flour, chalk, linseed cake, occasionally also sesame seeds and ground grains of paradise. (L'Union Pharm., xiv, 145; Am. Journ. Pharm., 1873, 364.) To avoid prosecution, the wholesale dealers in France are said often to sell the ground pepper pure, and the mixture intended for its adulteration separately. Ibid.

Soft Soap is frequently adulterated. According to J. B. Oster, the microscope is the best detective, silicates, silicic acid, alumina, ruptured starch granules, being readily distinguishable. Pharm. Centralh., 1873, 190.

Stearic Acid.—This is occasionally sold adulterated with paraffin. Wagner's process of detecting the latter consists in saponifying the stearic acid by potassa, adding chloride of sodium, which separates the soap as stearate of sodium, and washing with water or very dilute alcohol; paraffin is left behind. Chem. News, Jan. 10, 1873; Am. Journ. Pharm., 1873, 127.

Sel Boergrave, a Belgian specialty, which sold at the rate of 7 cents per ounce, turned out to be 100 parts epsom salt, 1 part chloride of sodium, 2 parts sulphate of potassium, and a little sugar. Arch. Pharm., Jan. 1872, 26.

Short Weight.—A Chicago firm received from an Eastern manufacturer 4 ounces of fused silver nitrate in sticks; the wrappers and sealing-wax covering the same were found to weigh 64 grains, and the weight of the sticks is so much short. Chic. Pharm., 1873, 31.

Scraps of tin were found soldered to the inside of the bottom of a can of castor-oil, which when removed weighed 6 ounces. Ibid., 31.

Canned fruit, sold in 2 pound cans, was found to weigh, each can together with contents, only 24 ounces. Ibid., 32.

Syrups.—Sugar-house syrups (amber, golden, silver drips, &c.), are often found contaminated with hydrochloric acid, sulphuric acid, and oxide of tin. Solution of chloride of tin is made use of to "bleach" the sugars, and to give them "style." Prof. Chandler, of Columbia College, among others,

has ventilated this fraud. The writer has some of this syrup, which betrays its contamination already on tasting.

Starch.—The agents of two Belgian starch-makers, and several wholesale and retail grocers, were sentenced, at Paris, in the early part of 1873, to fine and imprisonment, for selling rice-starch adulterated with 10 to 24 per cent. of potato flour and plaster of Paris. Drug. Circ., 1873, 83.

Tea.—The Chinese continue to adulterate this important article of consumption. Some years ago iron filings had been found mixed with the tea in a number of cases; but now we hear from Consul Medhurst, in Shanghai, that tea is extensively adulterated, for the last ten years, with the young tender leaves of the willow, treated in the same manner as the tea leaves. At the time when Consul Medhurst wrote that communication, there were about 53,000 pounds of this willow leaf in the course of preparation at the various drying-houses in the foreign settlements at Shanghai. The probable amount made up in 1871 is estimated at 400,000 pounds.

Most of the adulterations found in tea originate with the producers, and in the drying-houses in China, and only occasionally with our dealers. Of thirty-five samples of tea bought in Glasgow, and examined under the "Adulteration of Food Act," only six were found to be unadulterated, one was no tea at all, and the remainder contained: iron, plumbago, chalk, China clay, sand, Prussian blue, turmeric, indigo, starch, gypsum, catechu, gum; and leaves of elm, oak, willow, poplar, elder, beech, hawthorn, sloe, &c. New Rem., April, 1873, from North Brit. Daily Mail.

Accidents from Dispensing Wrong or Adulterated Drugs.—The following were noted during the past year: Sulphate of strychnia and sulphate of morphia dispensed for sulphate of quinia (France); hydrocyanic acid dispensed for hydrochloric acid (France); bichloride of mercury for calomel, acetate of barium for sulphovinate of sodium (France); sulphate of potassium containing arseniate and binoxalate (France); muriate of quinia containing muriate of morphia (Germany); extractum belladonnæ for extr. taraxaci (England); carbolic

acid water for carbonic acid water (England); pulv. opii for Dover's powder (U. S.); tinct. aconiti for tinct. aurantii (U. S.); tinct. opii for paregoric (U. S.).

Collin's "Remedy for the Opium Habit," which is sold at $16 a bottle, has been examined by a correspondent of the Druggist's Circular, who found it to be syrup colored with fuchsin, and containing a large proportion of sulphate of morphia. Chic. Pharm., 1872, 131.

REPORT OF THE COMMITTEE ON LEGISLATION.

Your committee has comparatively little to report which would not be a repetition of former reports, in regard to attempts made in different States of the Union of having laws enacted regulating the practice of pharmacy. Bills have been introduced last year in the legislatures of several States, in some of which they were passed by one house, but failed in the other, mostly from want of time. The only pharmacy bill which has become a law since the last report, was passed in the State of Ohio, and relates to *cities of the first class* (that is, to cities having at least 175,000 inhabitants). The law is slightly modified in its provisions from the Philadelphia pharmacy bill, the part relating to adulterations and punishments therefor having been left out altogether.

In the province of Ontario, Canada, by a recent enactment of the legislature, pharmacists are now not legally regarded as liquor dealers; the first section of the act to amend the acts respecting tavern and shop licenses, passed last April, requires that all who deal in liquors shall be licensed, but this clause does not apply "to any chemist and druggist, duly registered as such, under and by virtue of the Pharmacy Act of 1871, who keeps or has such liquors for medicinal purposes only." This is certainly a just proviso, and it is very desirable that the internal revenue laws of the United States be modified so that it may not be necessary to legally become a liquor dealer

while carrying on a pharmaceutical business. If such or a similar proviso should be incorporated into the law, it may be necessary to surround it by stringent measures to prevent it from becoming a source of loss to the government. The pharmacist who has the weal of his profession at heart, will gladly comply with any measures which the government may think requisite to protect itself against fraud if he thereby escapes the present requirements of procuring and displaying the license of a liquor dealer.

Last year it was overlooked to report a law passed in Illinois, and which in its design is similar to the one which two years ago was passed in Pennsylvania, though the latter attempts to accomplish the same or a similar end by entirely different means.

In Nebraska an attempt has been made to have a pharmacy bill passed, which failed for want of time; however, a section was introduced and incorporated into the criminal code in reference to the sale of poisons; this is similar to the poison law of Ohio.

As far as the information of your committee goes, the different pharmacy laws work well, and have been well received by the communities for which they have been enacted. Your committee is not aware that any one has been prosecuted for violation of any portion of these laws.

In conclusion the committee express the hope that during the coming year a larger number of pharmacy laws may be passed.

JOHN M. MAISCH,
Chairman.

STATE OF OHIO.

A BILL *to Regulate the Practice of Pharmacy in certain Cities of the first class, and for other purposes.*

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That from and after the passage of this act, it shall be unlawful for any person to open or conduct any retail drug or chemical store, as proprietor or manager thereof, or engage in the occupation of compounding or dispensing medicines on prescriptions of physicians, or of selling at retail any drugs, chemicals, poisons, pharmaceutical preparations, or other medicines, within the corpo-

rate limits of any city of the first class in this State, having a population exceeding one hundred and seventy-five thousand inhabitants, until he shall have complied with the provisions of this Act.

SECTION 2. That there shall be nominated on the first day of the month of June next, and each and every second year thereafter, by the Trustees of the Incorporated College of Pharmacy, or Incorporated Association of Pharmacists for the advancement of Pharmacy in said city, ten persons from and out of the most skilled and competent pharmacists at the time doing business in the said city; from and out of the ten persons so nominated, the Judges of the Court of Common Pleas of and for the county in which the said city is located, shall select and appoint three persons, who shall constitute a board, to be styled the PHARMACEUTICAL EXAMINING BOARD of the city of Cincinnati. They shall hold the office for two years, and until their successors are duly appointed and qualified. They shall each of them, within ten days after their appointment, take and subscribe to an oath, or affirmation, before some competent officer, that they will faithfully and impartially perform the duties of their office; and any vacancy that may occur shall be filled for the unexpired term by the Judges of the Court of Common Pleas aforesaid, from and out of the persons previously nominated, as provided above.

SECTION 3. That the PHARMACEUTICAL EXAMINING BOARD shall keep a *Book of Registration* open at some convenient place, of which due notice shall be given in two newspapers of general circulation in the said city; in said book shall be registered the name and place of business of every person duly qualified under this act to conduct the Retail Drug or Apothecary business; and it shall be the duty of each and every person now conducting, or who shall hereafter conduct the business of Retail Apothecary in said city, to appear before said Pharmaceutical Examining Board, and be registered, within thirty days after notice. The said Board shall demand and receive for such registration from the person registered a fee of not exceeding five dollars ($5), to be applied to the payment of the expenses arising under the provisions of this act.

SECTION 4. That the PHARMACEUTICAL EXAMINING BOARD shall examine every person who shall desire to carry on or engage in the business of a Retail Apothecary, or that of retailing Drugs, Chemicals, Poisons or other Medicines, or compounding or dispensing of the prescriptions of physicians, touching his competency and qualification for that purpose; and upon the majority of the said Board being satisfied of such competency and qualification, the Board shall furnish such person a certificate of his competency and qualification, which certificate shall entitle the person named therein to conduct and carry on the business aforesaid.

SECTION 5. That the provisions of section four of this act shall not apply to any person who shall be engaged in the Retail Drug and Apothecary business as proprietor of the same in said cities, at the time of the passage of this act, or who shall hold the diploma of an incorporated college of pharmacy, whose diploma is granted and based upon a regular and previous term of service in the Drug and Apothecary business in addition to the instructions received in said college.

SECTION 6. That no person not a qualified assistant shall be allowed by the proprietor or manager of any store to compound or dispense the prescriptions of physicians [except as an aid under the immediate supervision of said proprietor or his qualified assistant], unless he has been at least two years apprenticed in a store where prescriptions of physicians are compounded and dispensed, and has attended one full course of lectures in Chemistry, Materia Medica, and Pharmacy.

SECTION 7. That a qualified assistant in the meaning of this act shall be a graduate in Pharmacy as provided in section five of this act, or a person holding the certificate of the PHARMACEUTICAL EXAMINING BOARD as provided in section four of this act.

SECTION 8. That all persons violating the provisions of this act relating to registration, shall be liable to a penalty of not exceeding one hundred dollars ($100), for each and every week during which he or they shall continue to carry on such business without such registration as provided by this act. And should any injury or damage accrue to any person by any Pharmacist violating the provisions of section six of this act, said pharmacist shall be liable to pay a penalty not exceeding one hundred dollars ($100) in each and every case, the penalty to be recovered for the use and benefit of the Board of Health of the said city, before any court of competent jurisdiction.

SECTION 9. This act shall take effect and be in force from and after its passage.

CHAS. H. BABCOCK,
Speaker pro tem. House.
ALLEN T. BRAINSMODE,
President pro tem. Senate.

May 5th, 1873.

STATE OF ILLINOIS.

AN ACT *to Prevent the Sale of Drugs or Medicines designed to Procure Criminal Abortion.*

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That no druggist, dealer in medicines, or any other person in this State, shall sell to any person or persons, any drug or medicine known or presumed to be ecbolic or abortifacient, except upon the written prescription of some well-known and respectable practicing physician. And any druggist or dealer in medicines filling such prescription shall, in a book especially provided for that purpose, correctly register the name of the physician prescribing, the person to whom sold, the name of the medicine or medicines, and the amount, together with the date of the sale.

SECTION 2. No druggist, dealer in medicine, or any other person, shall keep on hand or in any manner advertise or expose for sale, or sell, any pills, powders, drugs, or combination of drugs, designed expressly for the use of females, in any other manner or form than that hereinafter described, to wit: The proprietor of any such pill, powder, drug, or combination of drugs, shall submit, under oath, a true statement of the formula by which the same is compounded, to five well-known and respectable practicing physicians in the

county where the same is proposed to be sold; if the said physicians unanimously agree that the proposed formula is not of an abortifacient character, they shall issue their certificate, under oath, to that effect, a copy of which shall be kept, with the formula attached, for the inspection of any person desiring to see the same, by the druggist or dealer in medicine proposing or desiring to keep for sale such medicine—and this shall be his full warrant for such sale: *Provided*, this section shall not be taken or construed to apply to such compounds as are known as "Officinal."

SECTION 8. Any person or persons violating any of the provisions of this act, shall upon conviction thereof, be punished by a fine of not less than fifty nor more than five hundred dollars, or by imprisonment in the county jail not less than thirty days or more than six months, for each and every offence, or by both.

Introduced, March 9, 1871. Passed House, March 7, 1872. Passed Senate, March 22, 1872. Signed by Governor, March 27, 1872. Takes effect, July 1, 1872.

REPORT ON THE PHARMACOPŒIA.*

BY PROFESSOR GEORGE F. H. MARKOE, OF BOSTON, MASS.

So short a time has elapsed since the issue of the Fifth Decennial Revision of the Pharmacopœia, that anything more than a very imperfect review of it will be quite out of the question. A change of residence and of business location has made such heavy demands upon the time of the writer, as to leave but little opportunity to make critical trials of the new processes of the Pharmacopœia. It is the firm conviction in the mind of the writer, that all really useful criticisms on a work of this character, should be based on the results of actual experience in the practical trial of the working formulas. The imperfect nature of this report is, in a great degree, due to inability to execute the necessary experiments except in a comparatively few of the many new processes in the book.

The mechanical execution of the book does credit to all concerned in its publication, and in this regard is a great improvement on the Pharmcaopœia of 1860.

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* This report is not the report of the Permanent Committee on the Pharmacopœia, but an individual report of one of its members.—EDITOR.

As the book has been in the hands of all the members of this Association for some months past, it is quite superfluous to detail the number of changes that have been made in this revision. A careful perusal of the preface and of the tables in the book will give the necessary information.

The following criticisms are offered as the individual opinions of the writer. They are the results of his practical use of the officinal formulas. It is hoped that this endeavor to point out some of the shortcomings of the Pharmacopœia, will add something to the pressure that will be brought to bear for a speedy correction of the errors contained in our national standard. It is a matter greatly to be regretted, that notwithstanding the great advance that has been made in the science and the art of pharmacy, during the past ten years, and the many investigations that have been made and presented by this Association, as direct contributions to secure a Pharmacopœia that should be up with the best usage of the times, we should, after all this toil and labor, have a Pharmacopœia so imperfect in many of its processes, as to render a strict compliance with its commands in many cases impracticable.

Temperature.—The use of such terms as "gentle heat," "regulated heat," "moderate heat," &c., should give place to a statement of the degree of heat intended. The recognition of the Centigrade thermometer, and the practice of giving the degrees side by side, both in the Fahrenheit and Centigrade scales, would be a very useful innovation.

Specific Gravity.—The suggestion of Dr. E. R. Squibb, to give the specific gravity both at 60° F. = 16° C., and at 77° F. = 25° C., would be a great practical convenience.

Stoppage of Bottles.—The words glass-stoppered should be substituted for "well-stoppered," throughout the book.

Percolation.—No valuable information has been added under this important head. The refinements of the process so thorougly worked out and published by Dr. E. R. Squibb, under the name of repercolation, have been passed unnoticed. The very crude and imperfect process proposed by Mr. Samuel

Campbell has been, with some improvement, adopted for the preparation of fluid extracts.

Fineness of Powders.—The words "very fine," "fine," "moderately fine," &c., should give place to numbers indicating the mesh of sieve required to produce the required fineness of powder.

Acidum Muriaticum.—To satisfy the tests of the U. S. P., a pure acid will be required. This is a needless refinement, a good commercial acid being quite good enough for most pharmacial uses. The acid manufactured for the use of sugar refiners contains only traces of sulphuric acid, has but little color, and is easily obtained at a slight advance in price over the lower grades of commercial acid.

The use of chemically pure muriatic acid, in making Liq. Ferri Chloridi, Liq. Zinci Chloridi, Liq. Calcii Chloridi, &c., is certainly a useless expense.

Acidum Phosphoricum Glaciale.—Recent investigations go to prove the extensive employment of sodium phosphate as an adulteration for glacial phosphoric acid; a large portion of the acid in the market is thus contaminated.

Acidum Sulphuricum.—Distilled sulphuric acid will alone answer the tests of the U. S. P.; such an acid is not required for pharmacial uses. As stated by Dr. Squibb (Proceedings of 1868, p. 309), it is impossible to get sulphuric acid in quantities having the specific gravity 1.843. The best grade of commercial acid, the so-called 66° Baumé acid, rarely exceeds the specific gravity of 1.835. It is with acid of this grade that all the manufacturing chemists work, and what is successful in their hands should be successful in the practice of the pharmacist who deals with the officinal quantities. The small quantities of lead always present in commercial acid is of no practical importance, being always got rid of in the processes. In the Boston market there is one brand of sulphuric acid, made by the Bay View Chemical Works, and known by the name of "indigo or boiled acid," made on purpose for the use of dye-works, for dissolving indigo, which is

fully up to the specific gravity of the officinal acid. These makers concentrate their acid in glass vessels, hence have no fear of "spoiling their platinum stills," the excuse so often given by sulphuric acid makers for not sending out acid of specific gravity 1.842. The "indigo acid" above mentioned is furnished at a trifling advance in price over the 66° B. acid, or oil of vitriol of the markets.

Adeps should be transferred from the Materia Medica list to the preparations. Commercial lard is rarely fit for pharmaceutic use. The only sure way of getting really nice lard, is for the pharmacist to obtain the "leaf" as soon as possible after the pig is killed, the sooner the better, and "render it" himself, by means of a water-bath heat. Filtering the lard through paper while hot, and then stirring till cold improves the appearance of lard to a sufficient degree to pay for the extra time and trouble it takes. There is ample reason for believing, that all parts of the fatty tissue of the pig often find their way into much of the commercial lard that passes muster as "pure leaf lard." Lard that has a rancid or unpleasant odor, should be promptly rejected by the pharmacist, yet the U. S. P. only says by way of tests, "lard should be free from saline matter. Below the temperature of 90°, it is a soft solid." It is quite possible for lard to meet these tests and yet be unfit for medicinal use.

Alcohol.—Dismissed as superfluous; its place and name to be taken in the Pharmacopœia, as it has long been in commerce, by the so-called 95 per cent. alcohol of the market.

Alcohol Dilutum.—Would be much improved as a solvent for most drugs, if increased in alcoholic strength.

Alcohol Fortius.—Should replace alcohol sp. gr. .835, and take its name.

Arnica.—The root should be made officinal.

Aurantii Amari Cortex.—The outer portion of the rind should alone be officinal. That known in the market as "Curaçoa in ribbons" is very nice, and evidently prepared with much care.

Aurantii Dulcis Cortex.—The outer fresh undried rind of the sweet orange should alone be officinal; drying this article simply spoils it as a flavor.

Calcii Chloridum.—Fused chloride of calcium always leaves a flocculent precipitate when treated with water, due to slight decomposition by the heat required to fuse the salt. The precipitate should be soluble in hydrochloric acid. This fact should be mentioned in the tests.

Cannabis Americana.—Dismissed as superfluous.

Cassia Fistula.—Has no therapeutic value not possessed in a far higher degree by other better known and more easily obtained articles. This drug is always difficult to obtain of good quality, is not worth the trouble it takes to get out its feeble virtues, and has been retained as an ingredient in confection of senna, simply in deference to that kind of old-fashioned conservatism that always insists on keeping a poor thing in a prominent place, for no better reason than that it has always been there. The fact that men of non-progressive spirit held the balance of power in the sub-committee upon whom devolved the labor of revising and publishing the Pharmacopœia, will explain why so much obsolete matter has been retained, and so many proposed improvements rejected in the United States Pharmacopœia for 1870.

Cera Alba.—Dismissed as useless.

Conii Folia.—Dismissed as useless.

Glycerin.—As an addition to the officinal tests, should give no unpleasant odor when heated.

Oleum Amygdalæ Expressum.—Most of the expressed almond oil is made from the bitter almond, which is pressed previous to distillation for the production of the volatile oil of bitter almond. The officinal description is, therefore, incorrect in stating that this oil is only obtained from the sweet almond.

Calamus and Cypripedium.—Transferred to the primary list of the Materia Medica.

Acetum Destillatum.—Of no practical use. Not better fulfilled by diluted acetic acid.

Acetum Lobeliæ and Acetum Sanguinariæ.—Dismiss the alternative process by maceration.

Acetum Scillæ.—The blunder made in the United States Pharmacopœia of 1860 is perpetuated in the present revision. The powdered squill should be moistened with a pint of diluted acetic acid, instead of a fluid ounce, as directed in the text. The alternative process by maceration should be dropped.

Acidum Benzoicum.—Transferred to the Materia Medica list, and properly guarded by tests, to exclude the so-called German acid and hippuric acid.

Acidum Gallicum.—Transferred to Materia Medica list.

Acidum Sulphuricum Aromaticum.—The aromatics should be moistened, before packing, with a portion of the menstruum. If the whole of the acid is mixed with all the alcohol, and the aromatics are percolated with the mixture, a better product is obtained.

Acidum Tannicum.—Transferred to Materia Medica list.

Aconitia.—Transferred to Materia Medica list.

Æther, *Æther Fortior*, *Oleum Æthereum.*—Can neither be made safely nor profitably by the pharmacist. They should be transferred to the Materia Medica list.

Ammonii Bromidum.—The use of water of ammonia in this process is a mistake, and renders the process impracticable. Ammonia will only precipitate a portion of the iron as ferrous hydrate, the rest remains in solution, and will only precipitate by long exposure to the air, so that the iron may pass into the form of ferric-hydrate. By using ammonium carbonate as a precipitant, in place of the water of ammonia, a good result will be obtained.

Antimonii et Potassii Tartras, *Antimonii Oxidum*, *Antimonii Oxysulphuretum*, *Antimonii Sulphuratum.*—Transferred to the Materia Medica list; properly described and guarded by tests.

Aqua Ammoniæ.—Transferred to the Materia Medica list, or if retained in the preparations should have directions by which it can be made by diluting aqua ammoniæ fortior, which is now in the Materia Medica list, and in the opinion of your reporter, very properly so. Water of ammonia can at all times be obtained, of excellent quality, from the manufacturing chemists at a much less price than the pharmacist could possibly make it.

Aqua Aurantii Florum.—Transferred to Materia Medica list. There is no probability that "recent orange-flowers" will ever become sufficiently abundant in this country to admit of the production of orange-flower water that will compete in quality or price with the best grades of French manufacture. Florida and California may in future supply a portion of the home demand, but we must, for several years at the best, continue to look to Europe for our supplies of this valuable article.

Aqua Destillata.—The direction, "Distil two pints, using a tin or glass condenser, and throw them away," is retained in this revision. The writer renews the query made by Dr. Squibb, Which is to be thrown away, the two pints of water or the condenser?

Argenti Cyanidum, Argenti Nitras, Argenti Nitras Fusa, Argenti Oxidum, Atropia, Atropia Sulphas, Barii Chloridum, should all be transferred to the Materia Medica list, properly described, and tests of purity given.

Cadmii Sulphas.—Dismissed as superfluous.

Calcii Carbonas Præcipitata, Calcii Phosphas Præcipitata, Creta Præparata.—Transferred to the Materia Medica list.

Testa Præparata.—Dismissed as superfluous.

Carbo Animalis Purificatus.—The heating to redness should be performed in a closed vessel; if this important precaution be neglected, the charcoal will be burned up.

Ceratum.—The change in name is quite uncalled for, and leads to confusion. Either the name adopted in the United

States Pharmacopœia of 1850, "Ceratum simplex," or that of the revision of 1860, "Ceratum adipis," should be restored. Yellow wax should replace the "white wax" in this and in all the other preparations in which it is now ordered.

Cinchonia.—Transferred to the Materia Medica list.

Collodium, Collodium cum Cantharide, Collodium Flexile.—These liquids are much better kept in bottles provided with good sound corks than in the "well-stopped" or glass-stoppered bottles directed in the Pharmacopœia.

Confectio Sennæ.—This preparation would be improved if the purging cassia were dropped. It would then be more likely to be made by the pharmacist than to be purchased in the drug market. Very little of the "commercial confection of senna" is up to the officinal standard. Purging cassia has no medicinal properties not possessed by senna in a far higher degree, and the dismissal of the former from the preparation could be very usefully made up by a corresponding increase in the quantity of the powdered senna ordered in the officinal preparation.

Extractum Cinchonæ.—The old method of first percolating the yellow cinchona with alcohol and then continuing the percolation with water, is retained. This is certainly a very bad practice, and serves only to increase the yield of extract by extending the active alcoholic extract with inert watery extract. It is a great pity that this antiquated process did not give place to the elegant process offered by Dr. Squibb.

Extractum Colocynthidis Compositum.—Dr. Squibb's method of combining the various ingredients by heat before powdering should be adopted, for by this means a much nicer product is obtained.

Extractum Jalapæ.—Still retains the watery extract, and this in spite of the experiments made by Mr. A. B. Taylor, and the exhaustive studies and investigations of Dr. Squibb, that have so conclusively proved the worse than useless character of the watery extract.

Extracta Fluida.—Your reporter most earnestly protests against the general model process, that serves as an introduction to the "Class of Fluid Extracts." The directions for the manipulation of each article should be complete in itself. The process as given in this revision is very far behind the best practice of the times, and, in the judgment of the writer, the fluid extracts of the present Pharmacopœia are inferior to those of the revision of 1860.

The writer's practice in the preparation of fluid extracts and in conducting the process of percolation, both on the quantities of the Pharmacopœia and on the manufacturing scale, lead him to the firm conviction that it is rarely possible to exhaust sixteen troy ounces of a drug with less than three pints of menstruum, while some drugs require much larger quantities of solvents to exhaust them of their active principles, even within practically useful limits. It is greatly to be regretted that the beautiful process of repercolation, so ably advocated and illustrated by Dr. E. R. Squibb, should not have found a place in our national standard. The writer has been using repercolation for the preparation of extracts and fluid extracts ever since it was introduced by Dr. Squibb, and considers it the most useful improvement that has been added to our means of efficiently and economically preparing solid and fluid extracts.

The very extensive use of glycerin, shown by its presence in 34 out of the 46 officinal fluid extracts, is an innovation that will not stand the test of practice. There are but very few drugs that require the use of glycerin as a solvent, and its employment, when not positively useful, is objectionable.

Extractum Belladonnæ Fluidum.—Leave out the glycerin, and continue the percolation to exhaustion.

Extractum Buchu Fluidum.—Repercolation is exceedingly well adapted to the preparation of this fluid extract.

Extractum Columbæ Fluidum.—A number of critical experiments made with this drug, treated with the officinal menstruum, proved that it required about two pints of menstruum to supersaturate 16 troy ounces of colombo in powder suffi-

ciently to have the liquid drop from the percolator, and that even after a prolonged maceration, and then percolating very slowly it was found difficult to practically exhaust the drug with less than three pints; to obtain this amount of percolate not less than five pints of menstruum had to be used. Water can, however, be used to push through the alcohol left in the residue. If the officinal process be strictly followed, the drug is very imperfectly exhausted of its bitterness.

The writer does not regard glycerin as useful in this fluid extract.

Extractum Cinchonæ Fluidum.—Alcohol is a better menstruum for cinchona than the officinal one. By exhausting the yellow cinchona with alcohol, adding four fluid ounces of glycerin to the percolate, and then by means of a water-bath still recovering the alcohol, continuing the concentration until sixteen fluid ounces of finished fluid extract are obtained, a very nice preparation is the result.

Extractum Colchici Radicis Fluidum, Extractum Colchici Seminis Fluidum, Extractum Conii Fructus Fluidum, Extractum Digitalis Fluidum.—Leave out the glycerin.

Extractum Ergotæ Fluidum.—The present officinal formula for this process is much inferior to that in the U. S. P., 1860.

The use of glycerin only loads the preparation with useless inert extractive, which it fails to hold in solution. A large number of careful experiments made by the writer convince him that the original process introduced by Prof. William Procter, Jr., and officinal in the U. S. P., 1860, has not yet been improved upon so far as the menstruum is concerned. Repercolation is very usefully applied to the preparation of this fluid extract.

Extractum Gentianæ Fluidum, Extractum Gossypii Radicis Fluidum, Extractum Hydrastis Fluidum, Extractum Hyoscyami Fluidum, Extractum Ipecacuanhæ Fluidum.—Leave out the glycerin.

Extractum Sarsaparillæ Compositum Fluidum.—Leave out the mezereon.

Extractum Scillæ Fluidum.—Leave out the glycerin.

Extractum Senegæ Fluidum.—Will deposit polygalic acid; should have an alkaline menstruum. The glycerin is useless.

Extractum Sennæ Fluidum.—The very large amount of glycerin ordered in this fluid extract is especially objectionable.

Diluted alcohol leaves very little to be desired as a menstruum for senna.

Extractum Spigeliæ Fluidum, Extractum Taraxaci Fluidum, Extractum Stillingiæ Fluidum.—Drop the glycerin.

Ferri et Quiniæ Citras.—A quickly soluble salt is much needed.

The officinal salt, although well adapted for use in pills and powders, is apt in time to lose its solubility. The amount of quinia yielded by adding ammonia in excess to 100 grains of the salt should be given in the tests.

Hydrargyri Chloridum Corrosivum, Hydrargyri Chloridum Mite, Hydrargyri Oxidum Rubrum, Hydrargyri Sulphuretum Rubrum.—Should all be transferred to the Materia Medica list.

Hydrargyri Iodidum Viride.—The color of this salt is always yellow, therefore it should be called *Hydrargyri Iodidum Flavum.*

Hydrargyri Oxidum Flavum.—The quantity of solution of potassa, 17 troy ounces, is insufficient, therefore oxychloride is produced. Twenty-five (25) troy ounces of solution of potassa should be used, in order to produce the result aimed at by the officinal formula.

Liquor Calcis.—The slaked lime should be washed to remove the fixed alkalies, often present, before it is used for making "lime-water."

Olea Destillata.—Should all be transferred to the Materia Medica list.

Potassii Cyanidum.—Transferred to the Materia Medica list.

Potassii Bromidum, Potassii Iodidum.—Transferred to the Materia Medica list.

Pulvis Aromaticus.—The Pharmacopœia directs "cardamom deprived of the capsules," and nutmeg, both in "fine powder." Will the proper authorities be kind enough to inform us how this is to be done, without injury to these aromatics? They surely cannot be got into a "fine powder" without drying, and they cannot be dried without the loss of very much of their volatile oil. If Dr. Squibb's method be adopted of taking all of the aromatics ordered in the officinal formula and powdering them all together, a very nice product is obtained. The ginger and cinnamon will absorb the oils from the cardamom and nutmeg, and thus all necessity for artificial drying be avoided.

Pyroxylon.—In the second process there is an error in the quantity of sulphuric acid (specific gravity 1.833) ordered. Ten (10) troy ounces should be used, instead of two troy ounces, as given in the text, page 262.

Quiniæ Sulphas.—Transferred to the Materia Medica list.

Sodii Phosphas.—Transferred to the Materia Medica list.

Spiritus Chloroformi.—A mistake occurs in the formula, which directs that the chloroform be dissolved in diluted alcohol. Stronger alcohol should be used.

Spiritus Lavandulæ Compositus.—Leave out the red saunders; this coloring-matter is very objectionable; cochineal is much nicer. Your reporter would like to see all coloring-matter dropped in the officinal preparations.

Strychnia.—Transferred to the Materia Medica list.

Succus Conii.—This and all the other preparations of conium leaves should be dismissed, and preparations of the full-grown unripe conium fruit should take their place.

Syrupus.—Great pains have been taken to give the working process for syrup with much detail, and to give the measure and also the weight, and the specific gravity of the finished product. This is all as it should be; but it is a matter

of far more importance that the same accuracy of direction should extend to the active medicinal syrups, about which we, in many cases, are not told what the volume or the weight of the finished product should be.

Syrupus Aurantii Corticis.—The direction to take "sweet orange-peel recently dried and in fine powder" is all wrong. It is simply taking the best possible means to divest the orange-peel of its only valuable property,—its agreeable flavor. The fresh, undried peel should alone be used.

Syrupus Ferri Iodidi.—The direction to heat the "syrup in a *water*-bath to 212°" is needless. The iodide of iron solution can be added at once to the syrup without heating.

Will the authors of the officinal process be kind enough to inform us how they managed to heat syrup, contained in a bottle, to 212° by means of a water-bath? The writer has been taught to believe that there is always several degrees of heat lost in transmission, especially through glass. This being true, and the heat of boiling water being 212°, it is impossible to heat the syrup to that temperature; the degree of heat communicated to the syrup will depend, in a great measure, upon the thickness of the glass bottle; even when a thin flask is used the temperature will be several degrees cooler than the temperature of the boiling water.

Syrupus Sarsaparillæ Compositus.—The guaiacum wood should be dropped. The resin of guaiacum that is extracted by the diluted alcohol, is all precipitated during the evaporation, and remains on the filter. The pale rose can be very well spared, being of no practical use in the preparation; if dismissed it would not be missed.

Tinctura Conii.—Dismissed as useless. A tincture of the unripe dried conium fruit should take its place.

Veratria.—Transferred to the Materia Medica list.

In the opinion of the writer, the fifth revision of the United States Pharmacopœia fails to represent the progress that has been made in the practice of pharmacy during the past decade.

It has "followed the wake of advancing knowledge" at so sluggish a pace that little has been done to "gather up and hoard for use what has been determined to be positive improvement." There can be no doubt of the fact, that the Pharmacopœia, as it now stands, disappoints the expectations of the pharmacists of the United States, and that this feeling of disappointment will lead to an earnest, positive demand for a speedy correction of its many practical errors. If this Association adds the great weight of its influence in the same direction, a new and corrected edition will be the practical and much-needed result.

George F. H. Markoe.

Boston, September, 1873.

SPECIAL AND VOLUNTEER REPORTS AND ESSAYS.

I. PHARMACY.

SUGGESTIONS TO BEGINNERS IN PHARMACY.

BY PROFESSOR WILLIAM PROCTER, JR.

Reply to Query No. 30.—What shall I read, and where shall I begin? An essay in reply to this constantly recurring query of beginners, who are confused by the mass of books presented to them as sources of the knowledge they need.

If the reply to this query does any good it must be by appealing directly to those for whom it is intended, viz., beginners in pharmacy, or those in the first year of their apprenticeship, and indirectly to proprietors and qualified assistants, who have it in their power greatly to aid the former class by an occasional word of advice or friendly suggestion. When a boy enters an apothecary shop with the view to becoming a pharmaceutist, he is at first employed in a great variety of services, as in opening and closing the shop, sweeping and dusting, cleansing mortars and other utensils, washing bottles, grinding, bruising, and garbling drugs, cutting herbs, stirring evaporating liquids, cutting, pasting, and attaching labels, bottling liquids, &c.; engagements requiring but moderate skill: after a time, however, the boy becomes aware that he is only on the surface of the knowledge he came to acquire, and that it is necessary for him to read and study. If he is thoughtful and earnest, and is fortunate in finding himself associated with a kindly disposed clerk, who will give a proper direction to his inquiries, and encourage

his desire for knowledge, he soon gets sufficiently within the subject to find the great extent of its range and the variety of its detail.

The first effects of this impression are sometimes strongly discouraging and depressing, but if he perseveres, and has mastered the idea that all knowledge is of gradual growth, that like the stalactite it grows by accretion from without, as well as, plant-like, by development from within by thought-action, he will soon become reconciled to the process, and employ his spare time in its pursuit. But what shall the boys do who have no guide in a well-disposed associate, or who may be so unfortunate as to be the victim of a churlish or tyrannical clerk, or of an oppressive illiberal employer, or, what is nearly as bad, to be placed at service with an ignorant, ill-qualified preceptor?

In considering the query, it has appeared feasible to undertake a short suggestive essay, which, without entering deeply or systematically into the subject of pharmaceutical tuition, may succeed in aiding this extensive class of learners, and at the same time afford a help to well-disposed apothecaries, who really desire to aid their boys, but who are at a loss how to advise them.

The *special* knowledge requisite to the apothecary is of four kinds, viz.:

1st. A practical acquaintance with the implements and apparatus of pharmacy, and with the methods of using them in all kinds of manipulation.

2d. The intelligent use of this apparatus in making preparations of the Pharmacopœia, so as to adapt it to the nature of the material treated, which involves not only some acquaintance with the physical laws, but also with the nature and composition of drugs.

3d. The study of the scientific relations of pharmacy as explained in works on Chemistry, Materia Medica, Botany, and Physics, and a thorough acquaintance with the physical appearance and properties of drugs.

4th. That important part of the business involved in getting medicines ready for the sick, as well on the prescription

of physicians, as on ordinary demand by consumers, where a maturity of judgment has to be exercised in regard to the correctness of substances required. The construction of the Latin language, and some knowledge of its vocabulary, is absolutely necessary in this department in many countries, though less indispensable here than abroad.

In view of all this knowledge to be gained, it must be apparent that the native ability, and the preliminary education of the boy, have much to do with his success in mastering its details. So important is it that the beginner in pharmacy should be well grounded in the ordinary branches of school education, that in several countries abroad, none but such are admitted to apprenticeship, with some knowledge of the classics superadded. When, therefore, he brings with him some rudimentary knowledge of the sciences as taught in the best common schools, our novice is well equipped to make progress in the avocation he has chosen, and needs only perseverance to succeed.

The text-books upon which the beginner has mainly to depend, are the United States Pharmacopœia, the United States Dispensatory, and some one or more works on chemistry and pharmacy, with a Latin dictionary, and when possible Webster's dictionary. One of the first lessons is to get a practical acquaintance with the labels in the store, in connection with the substances labelled; this is the groundwork of his study of the business, and is essential to progress in other directions. The habit of abbreviating labels on shop furniture and in prescriptions, adds much to the trouble of the novice in learning them, and it has sometimes happened that he has never thoroughly acquired the terminations of the words so as to use them with facility. A good plan is to commence with a shelf of bottles or a row of drawers at a time, and by the aid of the officinal list of the Pharmacopœia and the Index of the Dispensatory, to copy the names in full into a rough notebook in *columns*, placing the English name in line. He should be assured that the labels are correct for the substances contained, and then by close observation get as clear an impression of the appearance, taste, and odor of each substance as

possible. Another shelf or row should then be taken and proceeded with, observing from time to time to exercise the memory and the senses on each preceding lesson till it becomes familiar. This brings us to consider for a moment the manner of consulting the Pharmacopœia and Dispensatory for this purpose. The Pharmacopœia officinal list is arranged alphabetically, and the same arrangement applies to the groups or kinds of preparations, as well as to the individuals of each group. The *officinal names* (or authorized names) in full, with the regular English name, and a brief definition of the nature and natural source of the substance is given. Most Materia Medica names will be found in this list, whilst preparations will be found in the second part of the book, and most easily by consulting the index. Special attention should be given to the spelling of the Latin names and their terminations. For example, suppose our young friend in his first lesson has a drawer labelled "Colocyn.;" referring to the list he finds "*Colocynthis*," translated "Colocynth," and described as the fruit of Citrullus colocynthis "deprived of its rind." He naturally desires to know what sort of fruit, what are its qualities, what sort of a plant yields it, where it grows, what it is used for, &c. To get these answers he must go to the Dispensatory, article "Colocynthis," where he will find all he desires to know about it; but *this* inquiry may well be left until he has considerably extended his superficial knowledge of drugs and their correct names.

The immense size of the United States Dispensatory, and its comprehensiveness of detail, render it a formidable object as a text-book for the beginner, until he gets the key to its construction, and finds it almost as easily consulted as a dictionary, having an alphabetical arrangement. The greatest difficulty it presents is its fulness, and the longer time necessary to consult it. But it is by no means necessary for the beginner to read each entire article: for instance, in the example above stated, he can easily find that colocynth is a fruit like the mock-orange, growing on a vine with leaves like those of the watermelon, that its pulp is exceedingly bitter and

purgative, that it comes from Northern Africa, and enters into several valuable medicines.

In an establishment where the preparations of the Pharmacopœia are made for its own dispensary, the beginner has a great advantage, as from the first he can witness processes more or less interesting, and which arrest his attention. Though at first only as an aid, or perhaps coming in at the close to cleanse the apparatus, he soon learns enough to be useful, and then if he is willing and obliging, he has the *open sesame* of rapid advancement. In this way a three months' apprentice, has taken charge of the weekly supply of citrate of magnesia in a careful and reliable manner, and has felt encouraged and sustained by his consciousness of being useful, and of advancing in knowledge. When he becomes conscious of a desire to enter the field of book knowledge, and make it assist his observing faculties, and explain his difficulties, a great point has been gained in his onward progress. Let us suppose his first trouble in washing mortars to arise from Prussian blue, which resisting his best efforts he applies for help, and is told to use solution of potassa, the magical effect of which makes a deep impression on his mind. When evening comes he sets to work with the Dispensatory, at the article Prussian blue, and soon gets at sea in chemistry, which he cannot understand, but he succeeds in learning that potash forms a soluble salt with Prussian blue, and thus detaches it from the porcelain surface, setting oxide of iron free. At the same time he glances at "*Potash*," learns its origin from wood-ashes lye, that it is a *base*, neutralizes *acids*, forms *salts*, dissolves *fats* and forms *soap*, and many other facts.

Now it is not to be expected that our young friend has gotten a very clear insight into the chemistry of these subjects, but if intelligent he has seized the leading points, and will not rest until all is understood by subsequent study. The habit of close observation of color, taste, odor, shape of outline, and configuration of parts, should be cultivated as one of the most valuable aids in gaining knowledge, as he progresses from day to day, and by cultivating a habit of using the pencil to imitate the form and construction of objects,

whether drugs or apparatus, it will be found to aid the memory decidedly.

We will suppose our lad is set at grinding senna in a Swift's mill, for fluid extract. It is light work but tedious, and in the frequent resting-spells his curiosity is attracted to the drug. He finds several distinctly shaped leaves, notices that at the base they are mostly *uneven*, but some are not, that when chewed the drug colors the saliva quickly, and that it has a peculiar odor. If he is critical he may find leaf-stalks, seed-vessels, &c., and by the time he has ground ten pounds he is pretty well acquainted with the sensible characteristics of senna. When evening arrives he resorts to his Dispensatory and finds that there are several kinds of senna, and it takes him some time to decide that the mixed character of what he had been grinding fixed it as the Alexandrian, or Upper Nile senna. He notes the kind of plant, gets a hint of its commercial history, what it contains, what liquids are best to extract its virtues, what medical properties it has, and what preparations are made from it. He then re-examines the leaves in view of his reading, looks at his school atlas for Nubia and Abyssinia as the country of its growth, and the next time he is sent to a large drug store asks to see a *bale* of senna, and he is pretty well booked up on senna, and will not forget it; all this will take several evenings. Senna is but one of a long list of vegetable drugs that in his first year's experience will practically come to his acquaintance, and by following the same course, an outline of whose history will be grasped, and gathered into his storehouse of memory for future use.

At the very beginning of the Pharmacopœia is a notice of the weights and measures used in pharmacy, and at the end of the Dispensatory a much longer notice describing the French and other weights and measures. Now as pharmacy is a business constantly requiring exact quantities by weight and measure, the beginner should from the first familiarize his mind with the officinal weights and measures, and the manner of using the scales or balance, and the measures of capacity, as well as the relations of troy weight to avoirdupois or English weight,

and metrical or French weight. He should also try his hand at dividing a given quantity, say a drachm, into ten parts with a spatula, by the eye, and then weigh each one, and see how it varies from six grains, the proper weight of a tenth. For the same reason that he exercises his memory to grasp knowledge, he should exercise his senses and muscles to acquire skill, constantly keeping in mind the old adage "that whatever is worth doing should be done well." In the simple matter of wrapping packages in paper there is a wide field for skill. Some never learn how to do it neatly, especially doses of powders. Others give so neat and regular a finish to their work as to make it attract attention. The wrapping of bottles and boxes in paper, and especially the tying of bundles, all are worthy of close attention until habitual skill is attained.

In the matter of cutting, and attaching labels to bottles and boxes, the same range of skill exists, and to be always neat requires care in gaining the habit at first.

In the manner of handling the pestle in trituration, in contusion, pill-making, or in emulsionizing, or of managing the spatula in mixing ointments or powders, there is a wide margin for grades of skill and neatness.

Cleanliness in pharmacy is a virtue that ranks with *order*, and without these the shop practice becomes more or less demoralized. Clean glassware, bottles, graduated measures, white mortars, bright spatulas, and a clean, orderly counter, add wonderfully to the pleasure of dispensing, as they do favorably impress the patrons of a store. The habit of restoring bottles to their proper places after using them, that of keeping all receptacles suitably filled ready for use, and that of labelling every vessel or package that is set aside, are among the most useful that contribute to shop order and comfort. The amount of trouble and annoyance saved by habitual attention to these shop morals, by *all* the employés, can only be appreciated by those who have seen the working of both plans, and drawn their conclusions.

It is to ingraft and fix these and other important habits, that our colleges require four years' apprenticeship or training at the dispensing counter and in the laboratory, before

granting their diploma; a requirement which should be most strictly carried out.

But a new experience awaits our novice; he is to take part in a chemical operation attended with some care and labor,—the making of Vallet's pill-mass of carbonate of iron. After weighing certain quantities of sulphate of iron and carbonate of soda, he separately dissolves them in boiling water containing a portion of syrup, strains the solutions to remove undissolved particles, and mixes them, when cold, in a vessel just capable of holding them, when, to his surprise, a thick, pulpy, bluish-white mixture results, which separates into a solid precipitate and a clear liquid above. The liquid is drawn off, and its place filled with pure boiled water containing syrup, and the whole intimately mixed, allowed to settle, and the process repeated, and the sediment finally drained on a cloth filter, tied, expressed, mixed with sugar and honey, and on a water-bath evaporated with constant stirring, until when cool it has a solid pillular consistence. The points in this process to attract his attention are: the reason that mixing the clear solutions produces a sediment, why boiled water is used, why the washing water is sweetened, why honey is used, and, finally, why a water-bath is employed. After the tedious process of stirring is concluded, and the pill-mass stowed away yet warm in jars, the Dispensatory will answer all these queries clearly and satisfactorily, if appealed to, and he will have added a chemical chapter to his experience, involving the law of double decomposition, and the power of sugar to prevent or retard atmospheric oxidation, and the process of decantation and filtration.

This is only one of many chemical processes that he will be called on to take part in, long before he will be able to attend lectures at college; or, if this is beyond his reach, before he can make progress in the study of chemistry sufficiently to understand chemical reactions. It is this excited curiosity, this desire to understand phenomena daily occurring, that is to stimulate his efforts at self-improvement in knowledge, and finally give him the victory over adverse circumstances. Some of the greatest minds devoted to chemistry in the past

have thus begun their career. Scheele, the discoverer of so many valuable organic bodies, Davy and Liebig, so justly celebrated as chemists and investigators, were all at one time apothecary boys, groping in the dark bravely, until they found light for themselves and all others. But our beginner is getting sufficiently advanced to be called a student, he is in his second year, and looking forward to attending lectures next winter, when he will enter systematically on the study of the science of his business, and clear up hundreds of little theoretical difficulties that have bothered him in his progress. He begins to see that botany is necessary to understand materia medica, and that the laws of physics or natural philosophy have much to do with explaining the phenomena of steam apparatus, of solutions, of crystallizations, and of taking specific gravities; and he rightly desires the aid of handbooks. For the former, Dr. Gray's little work, "How Plants Grow," will serve his purpose; or "Lindley's Outlines of Structural Botany;" and for physics, some work like "Ganot's Popular Physics," will do for awhile; but Mueller's will be more satisfactory for advanced students. Special works on manipulation, chemical and pharmaceutical, are of great value. The great book of Faraday on Chemical Manipulation, so simple in its language, but so full in its meaning, has long been out of print; but "Campbell-Morfit's Chemical and Pharmaceutical Manipulations," is a good substitute and well illustrated. Bowman's Chemistry for the Beginner in analysis, is good; but for the more advanced student, Dr. Attfield's Chemistry, written with a view to the needs of the student of pharmacy is excellent. In fact, the literary aids to the student are so numerous that he is often confused in choosing a guide, and it is of the utmost importance that he should keep his mind clear to his main object, the building up layer on layer, regularly and solidly, the superstructure of his own professional knowledge, on the solid foundations he has laid by his first and second year's devotion to the rudimentary services in the laboratory and at the counter. If successful, his reasoning powers will have been exercised freely, his judgment matured, his memory well stored with

facts, derived from study or from observation and experience, and he will be well fitted to receive the honors of graduation, and to go out into the world as a disciple of Esculapius in the service of his fellow-men.

NOTE ON A GENERAL APPARATUS STAND, UPRIGHT CONDENSER, PINCHCOCK, AND BURETTE STAND.

FOR CHEMICAL AND PHARMACEUTICAL USES.

WITH ILLUSTRATIONS.

BY EDWARD R. SQUIBB, M.D.

The common piece of apparatus, consisting of an upright rod with sliding rings supported on a broad foot, and generally miscalled a "retort stand," is, as generally met with, an unsatisfactory article, and quite behind the necessities of the present time, yet most persons, like the writer, have continued to get along as well as they could with it rather than spend the time and money necessary to try to improve and extend it. The most prominent defects are weakness and flimsiness, and too narrow a sphere of usefulness for the present wants in table operations. The common use of illuminating gas, and the various modifications of the admirable Bunsen burner, have so increased the number and facility of table operations in chemistry and pharmacy, that a better and more generally useful apparatus stand has been much needed; and this must be the writer's apology for the present attempt to supply this want. To save the reader from lengthy descriptions, and to save the Association the expense of illustrations, the writer has had four woodcuts made, which are presented with this paper, showing some of the more prominent applications of the stand as at present constructed, the stand itself being also presented herewith. As will be seen at a glance, it is a large, rough, uncouth-looking affair; and to those so long used to the light, slender, and bright-looking stands in common use,

it will appear exceedingly ugly, clumsy, and unwieldy. But it will be found to give effective and steady support to whatever may be properly placed upon it, and the variety of uses to which it can be conveniently applied is large, and cannot be appreciated at a glance.

It consists of eight principal parts, and several secondary or minor pieces.

First. A cast-iron foot, *A*, 9 by 15 inches, into which a piece of wrought-iron pipe 30 inches long and ⅞ inch external diameter is firmly screwed upright. This supporting rod or pipe is placed near the middle of the foot, so that several pieces of apparatus, representing as many distinct operations, can be supported all around the rod at the same time.

Second. A circular, round-bottomed sand-bath, *B*, with a horizontal flange around the brim. This flange is perforated and notched for receiving the wires or strings used to support, or tie firmly in, the flasks, retorts, or other vessels which require to be firmly held in the bath. Fine copper wire is best adapted to such purposes, and its use is illustrated in supporting the flask, *a*, Figure 1. This bath is six inches in diameter, but from being a small portion of a large sphere, it is well adapted to a great variety of sizes in vessels.

Third. Two adjustable rings of cast-iron, *C*, about 6 inches in diameter, furnished with three movable rods which slide to or from the centre through holes made in the rings at equal distances apart. These rods are square, and are fixed in any desired position by thumb-screws, and their direction is somewhat oblique to the horizontal plane of the rings, to adapt them to a greater variety of uses, as the rings may be put upon the rod with the thumb-screws either down or up. Figs. 1 and 2, *C*, give illustrations of their use in both positions. By the use of these square rods as radii in the rings, the rings may be adjusted to hold vessels of any size or form, regular or irregular, and in various ways, from the smallest crucible up to a gallon capsule, as may be seen in the figures. This means for adjustment avoids the necessity for rings of various sizes, and is more conveniently and more accurately applicable. The most difficult piece of apparatus to support

is the now little-used retort. But if the bottom of a retort of any ordinary size be supported in the round sand-bath, and the body, well up towards the tubulure, be steadied by adjusting the ends of these radiating rods to its irregular form, it may be kept in position with moderate facility. These rings are attached to the upright supporting rod of the stand at any part of its length, so as to be put on or off at any time, by a device which is believed to be simple and strong, and perhaps not more inconvenient than others at present in use. This device is best seen in detail in Fig. 4, *C*, where *q* is a V-shaped jaw, which when in use touches the upright rod upon only two lines of its circumference. These jaws are skilfully notched or slotted out so as to receive the saddle *r*, with its thumb set-screw. When the jaws are placed astride of the upright supporting-rod of the stand, and the ring raised a little obliquely upward, the saddle will slip easily into its notch, and when in, if the ring be brought down to a right angle with the rod, it will no longer slip out, but is still loose and free to move up or down on the rod. To fix the ring in any desired position on the rod, it is now only necessary to screw up the thumb-screw; and this not very tightly, lest by unnecessary power the jaws be broken off. This same device is used in all the parts to be supported on the rod, and all are made so nearly alike that the saddles are interchangeable. As by this device these different parts do not slide upon the rod, but are simply loosened from one point and moved to another, and when fastened only touch the rod at three points, the varnish of the parts is much more durable, and therefore the metal less exposed to rust, and to be thereby clogged in the movements of the parts upon each other. For the further protection of the various parts they should always be detached and put away when not in immediate use.

Fourth. Two thin cast-iron plates, *D*, about 16½ inches long by 3½ inches wide, perforated with holes of various sizes, and with long wedge-shaped openings also of various sizes. These serve for very many useful purposes, but chiefly, perhaps, as a funnel and tube-rack, and for the uses of a movable shelf. They also, singly or together, make a fair support for burettes

and pipettes. Flasks, test-tubes, or any vessel with a flaring lip may be conveniently supported over any source of heat or for any purpose by means of these various openings. To use the wedge-shaped openings, let the neck of the flask or other vessel with lip, be passed through the larger part of the opening, and then be moved along toward the smaller end until it is arrested by the approaching sides of the opening. At that point it will hang suspended safely by the lip. If it be not judged safe to trust to the lip, a narrow section of India-rubber tubing stretched over the neck so as to clasp it firmly will form a better rim for support. These sections or rings cut from India-rubber tubing of various sizes are very convenient for suspending flasks, tubes, burettes, &c.

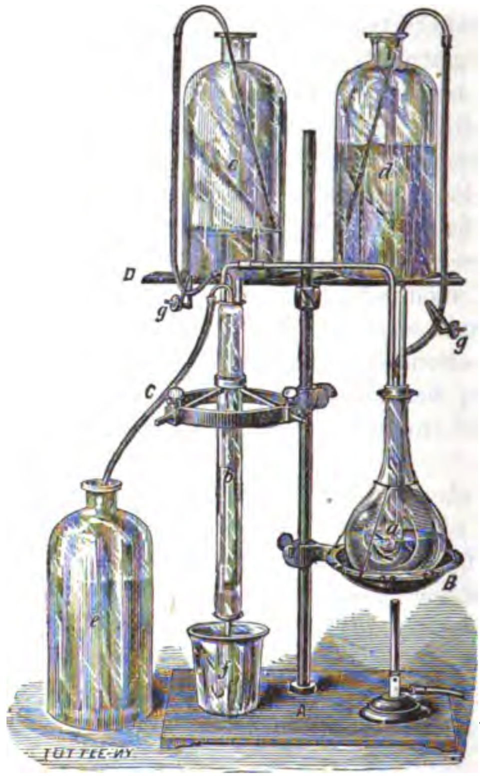
Fifth. A long, narrow, shallow cast-iron pan, *E*, about 17 inches long by 6 inches wide, for sand-bath, drying-table, &c. This also serves for many purposes, but especially for the application of moderate, uniform heat of any desired degree. Half filled with sand, and heated by a burner under one end, it affords various degrees of moderate heat for digestions, evaporations, &c., throughout its length, and with careful regulation of the burner it is capable of doing much useful work.

Figure 1 shows the stand in use for a process of distillation. It is often difficult to make persons understand the best way of distilling comparatively large quantities from small vessels, for example, a gallon of liquid from a two-pint flask, and this and other points are well shown in this illustration.

Upright Condenser.—Retorts are now very little used by those who manage small distillations best. In comparison with a simple flask they are unhandy, difficult to support, generally badly shaped, expensive, and easily broken, while for most purposes they are devoid of counterbalancing advantages. Hence their use is becoming more and more restricted to the distillation of acids. Liebig's condenser was constructed and especially adapted to use with retorts, and now that retorts are less used, a modified condenser better adapted to flasks has been devised and much used by the writer, and is shown

in this illustration. The chief objection to a Liebig's condenser of adequate size is the space it takes up on a table. It also permits the loss of much imperfectly condensed vapor by the mere gravity of such vapor. The condenser here offered is a modification of Liebig's, which if it obviates these objections, may be considered an improvement. Like Liebig's

FIG. 1.

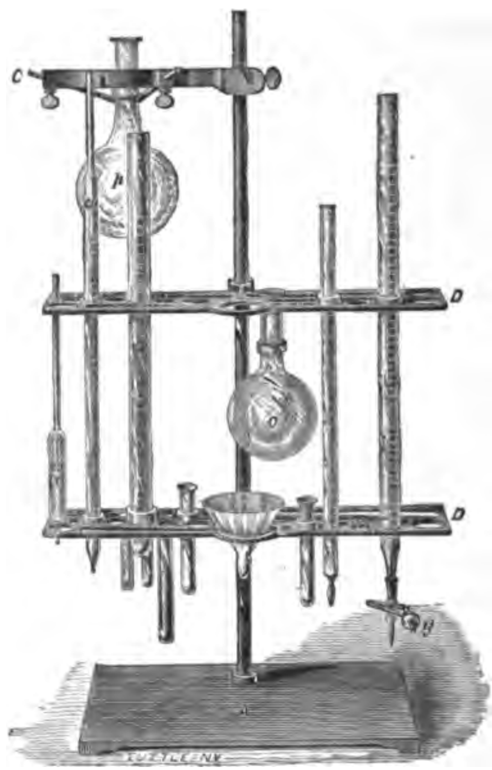


it consists of a condensing-tube with a water-case around it, and appliances for supplying cold water at the distal end and removing warm water from the other, but the condensing-tube is narrow and is doubled upon itself, so that two lengths of it traverse the water-case. From the bend a small T-tube passes out through the lower cork, and the two ends of

the condensing-tube pass out through the upper cork. One of these ends is longer than the other, bent at right angles over the other, and is widened a little to receive the end of the vapor-tube from the flask. This arrangement at the top avoids the projection of the horizontal end, and enables the condenser to be packed in a straight box for transportation and preservation. Both ends of the condensing-tube may, however, be left straight, and the right angle bend be given to the tube from the flask. A small straight tube passes through the cork reaching nearly to the lower end, for the cold water supply, and a small bent tube passes through the opposite side of the upper cork to carry off the warm water. Both of these are connected by small india-rubber tubing with proper reservoirs. When the condenser is of small size the external water-case is best made from a piece of large glass tube. If larger, of tin, copper, or brass. The condenser here represented is about eighteen inches long, the condensing-tube about a quarter of an inch internal diameter, and the water-case about one and a quarter inches diameter. When in use the vapor to be condensed enters one leg of the condensing-tube passing downward. The first drops that may be condensed run down and fill the small outlet tube, so that any vapor which fails to be condensed in the first length, fails to find an exit by the small exit tube, and has to rise against its gravity, and against the current of condensed liquid which may be flowing downward toward the exit, and thus encounter conditions most favorable to perfect condensation. This upright condenser is very effective in practice, having nearly double the capacity for the same length of water-case as Liebig's condenser. The size here described will easily condense a pint of water per hour by the use of a gallon of cooling water. The distilling flask *a*, is fitted with an india-rubber cork with three perforations, easily made by means of a sharp wet cork-borer, one for thermometer, one for the vapor-tube, and one for a small feeding-tube. The flask is secured in the sand-bath by small copper wire, and is connected with the condenser *b*, by means of a piece of india-rubber tubing about an inch long, slipped over the ends of the vapor-tube

and the condensing-tube where these come together. This is much better and much easier than a connection made by wrapping and tying. The flask *a*, is also connected by a siphon-tube, partly of glass and partly of india-rubber, with the vessel of liquid *d*, to be distilled, which is placed upon the elevated tube-rack *D*, which now serves as a shelf. The flow of liquid from the vessel *d*, into the flask *a*, is controlled to about the rate of the distillation by a convenient pinchcock *g*, to

FIG. 2.



be mentioned farther on. The arrangement for supporting the upright condenser by the inverted ring, and india-rubber collar, made of a short section of large india-rubber tubing stretched on to the water-case, and for the water supply to the condenser, are easily understood from the illustration.

Figure 2 represents the tube-racks *D*, in use for some of the various purposes to which they are applicable, either separately or together; and also represents a mode of suspending a flask *p*, by means of the ring *C*, by the use of the india-rubber ring or collar made from a section of tubing stretched over the neck of the flask.

Figure 3 represents the stand in some other of its applications. The rings, *C*, are shown as supporting a capsule, *j*,

FIG. 3.

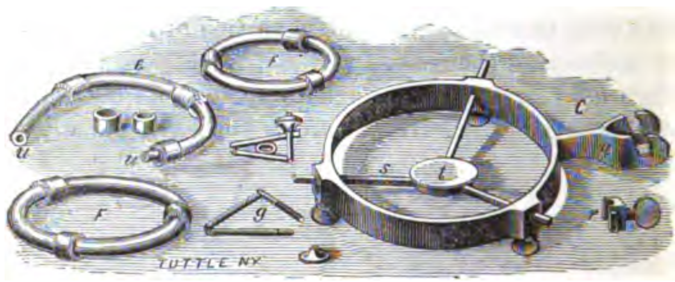
over a naked flame; and a capsule, *i*, in a water-bath; and a large funnel, *n*. It also shows the long sand-bath, *E*, in use.

Figure 4 shows the ring, *C*, in detail, and shows also

The Pinchcock.—This is a modification and simplification of Bunsen's well-known lever pinchcock for regulating the

flow of gases or liquids through flexible tubing. The modification consists in having one screw and milled head instead

FIG. 4.

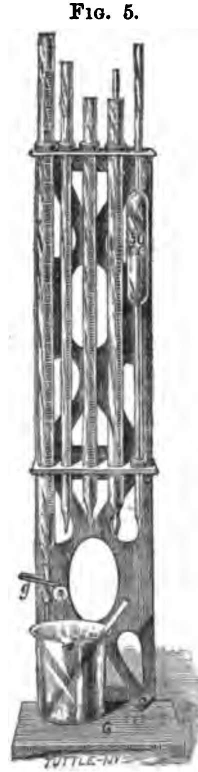


of two, the place of the second screw being advantageously taken by a simple hinge, and a slight bend near the end of the middle section of wire. This renders it lighter, smaller, and cheaper than Bunsen's, and gives the operator a more delicate control over the current, and that by one milled head. It is seen open, and the milled head off from the screw at *g*, and in working position just above, with a section of rubber tubing in place, to show the operation of the screw and lever. Three sizes are useful in most laboratories where the value of rubber tubing is duly appreciated, but the two smaller sizes, 1½ and 1¼ inches long, are most useful. The writer, however, uses some 3½ inches long, upon 1-inch hose. They serve to control the stream with the greatest delicacy and nicety, and are very convenient in the use of gas with the Bunsen burner. They are also much better than the spring pinchcock of Mohr for use with burettes, being susceptible of more delicate use with less skill, and any desired rate of dropping being easily and speedily attained. They are particularly convenient upon india-rubber siphons, and supply tubing of all kinds.

Fig. 4 also shows a modification of the grummet, *F*, made of rubber tubing, so useful as a stand for capsules and other round-bottomed vessels. As formerly made, a plug of wood, one-half to one inch long, had the two ends of the piece of tubing slipped upon it until the ends came closely together;

each end was then secured by a tack driven through rubber and wood and clinched. When a capsule sets upon such a grummet in a water-bath, the water is apt to boil inside the grummet long before that which is outside becomes heated, and thus cause bumping and other inconvenience, because there is little or no intercommunication between the portions of water. And when a capsule or flask is set upon such a grummet to cool, there is little or no circulation of air round the bottom. But if three short sections of larger tubing are slipped over the grummet before the ends, *u*, are put together, and be then distributed at equal distances apart on the ring, one section covering the joined ends, the grummet will be much improved. The vessels will then rest upon three points only.

FIG. 5.



These seem to be simple matters to ask the attention of this Association to, but those practically acquainted with the relation between small conveniences and economy of time, will perhaps need no apology for introducing them.

The Burette Stand.—Burettes and pipettes graduated upon the metrical system are now in such common use, and with so much convenience and advantage, that a small stand capable of holding a judicious selection of them seems needed. That selection which is used and advised by the writer as being quite sufficient for all practical purposes is one Mohr's burette of 50 c.c , graduated to fifths; two Mohr's burettes of 25 c.c., graduated in tenths; one 10 c.c. pipette, graduated in tenths; one 5 c.c. pipette, graduated in twentieths; one pipette of 1 or 2 c.c., graduated in fiftieths or hundredths; and two capacity pipettes, with a single mark and long points, one of 25 c.c., the other of 50 c.c.

Figure 5 shows a convenient cast-iron stand holding such a

set, always in condition for immediate use. Each piece is held in its place by a collar made of a short section of india-rubber tubing stretched over the upper end to prevent its slipping down through the holes in which it rests. When out of use this stand and contents may either stand upright, or for fear of accident, be laid down upon its back. A woodcut of this stand, furnished with the apparatus named, has been prepared and the block is presented herewith.

BROOKLYN, August, 1878.

NOTE ON PHYSICIANS' POCKET-CASES.

BY EDWARD R. SQUIBB, M.D.

In the treatment of emergencies and acute conditions of disease, physicians often lose time which is most valuable by having to send for their remedies. Hence, within the past few years it is not uncommon for them, even in large cities, to carry a pocket-case containing small quantities of a few important medicines, such as are needed most promptly, and can be easily dispensed at the bedside. In night calls such pocket-cases seem particularly useful, and some physicians use two, one being especially adapted to the wants of obstetrical practice. Indeed, it seems doubtful whether two small cases of four, six, or eight small vials be not always better and more convenient than one large one, even if they be both carried at the same time. The pocket-cases hitherto accessible have not seemed the best that could be devised, and have been defective in two important points, namely, the proper measuring out and labelling of the medicines. At the request of the local medical society, of which he is a member, the writer has tried to improve the cases and to remedy the defects.

As a rule, only liquids and pills should be carried in pocket-cases, and these in small quantities frequently renewed, so that vials holding from one and a half to two drachms are

large enough for all ordinary purposes. The vials for liquids should be long and narrow; those for pills shorter and wider. The case should be of good morocco, not imitation, and should be light and strong. Spring locks or catches are poor at best, and often give much trouble by failing to lock, or by rapidly wearing out. Hence it is doubtful whether the supposed advantages of the flap and lock are real. The writer has, therefore, had some made, with a sliding cover like a common card case, for trial; but as these must be taken from the pocket by taking hold of the cover, should this become loose by wear, the case may drop out while the cover remains in the hand. Should this anticipated objection be not realized, this will doubtless be the best kind of case. These cases have either four, six, or eight vials in a single tier or row, or fourteen or sixteen vials in a double tier or two rows. Those with a single tier are not too thick for the breast pocket, but those of two tiers are too thick and clumsy for any ordinary pocket, except that of an overcoat, but may be more conveniently carried in the hand for night service, or in a vehicle. These larger ones are also serviceable as family medicine-cases, either for home use or to take into the country, or upon travelling expeditions. One of the greatest drawbacks to the use of physicians' pocket-cases has been the absence of any means of dispensing or dosing the powerful medicines with which they are supplied with any degree of accuracy. All physicians know the fallacy of dropping liquid medicines either from the mouth of vials, or from any of the various dropping-tubes with any proper control of quantity, as no two liquids are alike in the size of the drop formed from the same vial or tube; nor are any two vials or tubes alike in giving the same size of drop with the same liquid. To meet this difficulty the writer has had minim measuring-tubes constructed and graduated to single minims. These are of three sizes, namely, fifteen, twenty, and thirty minims, so as to be adapted to the longer or shorter vials of the cases. They are simply straight graduated glass tubes drawn down at the lower end to a narrow orifice. They are used by plunging them into the liquid in the vial up to the minim mark, which

indicates the desired quantity, or the quantity which can be taken out at one time, then closing the upper end with the forefinger, and transferring the charge to the vessel in which the doses are to be mixed. Having transferred the whole desired quantity by one or more charges from the vial, the tea or tablespoon by which the medicine is to be given, is used to measure into the vessel containing the medicine the number of spoonfuls of water to make the required number of spoonful doses. Holding the minim pipette over the vessel containing the medicine, pour one or more of the spoonfuls of water down over and through the tube, so as to rinse it thoroughly into the vessel below; then holding it firmly in the hand, by a rapid, sharp swing of the arm, throw the water out of it by centrifugal force. If the outside of the tube be now wiped dry, it may be returned to its place in the case with perfect security, that it will drain no water into the bottom of the case. The vials in the cases are made long and narrow, not only to give them strength and capacity, and the proper length for the breast pocket in which they then stand upright, but also because the case must be long enough for the minim pipette, and the corked vials may be of this length without loss of space, and again because the long vials admit of larger quantities being taken out at one time by the measuring-tube or minim-pipette. These tubes take the contents from the vials in a much more neat and cleanly way than by dropping or pouring, and after a little experience in the use of them not a drop is spilled to soil the vial, label, or case. Such advantages, to say nothing of the improved accuracy of substituting minims for drops, far outweigh the trouble of only being able to take out a few minims at a time when the vial is nearly empty. These tubes, from having straight sides and a pretty uniform calibre, are much more easily graduated to a moderate degree of accuracy than the common minim measure; and almost any one can make them, it being only necessary to stop the small orifice at the lower end of the tube, pour into it thirty minims of liquid, mark the surface of the liquid upon the tube, empty the liquid out, and finally divide

the space occupied by the liquid into thirty equal parts, by means of a common rule. Such tubes will be found very useful to the pharmacist in dispensing, if he will but break through old habits long enough to accustom himself to their use, for they remove accurately measured quantities from his bottles without soiling the neck or stopper, and do this easily and quickly. They will also be found useful to those far-sighted physicians who are now so wisely aiming at that accuracy in the administration of medicines, the want of which has so long obstructed the progress of therapeutics, for a physician can quickly and easily instruct patients, nurses, and attendants in their use, so that doses may be accurately, clearly, and neatly measured at the time of taking. For example, how easy it would be with one of these tubes to direct a patient to put twenty minims of fluid extract of cinchona in a half wineglassful of wine, and rinse off the used end of the tube by dipping it into the mixture, and shaking out the last drop into the wineglass before swallowing the mixture, then setting the tube upright in the wineglass, and putting all away until the time for the next dose. By some such means that desirable accuracy and uniformity of dosing may be attained which alone gives much value in comparing and accumulating the results of therapeutic experience with the Materia Medica. The facility with which these pipettes are made renders them inexpensive, so that if the demand should call for them in any moderate quantities, they could be furnished by the pharmacist at a very moderate cost, and their scope could easily be extended to sixty minims without the objectionable necessity of using suction in charging them.

The other supposed improvement in the physicians' pocket-case is to supply with each case a list of labels of proper size for the vials, which list may embrace most of the articles needed on emergency, or particularly useful to have in hand at the bedside in cases of disease where saving of time is an important element of success. This list embraces forty-four articles of the active Materia Medica in their most potent and concentrated form, and from such a list it is supposed that each

physician can make a selection of those which he most desires to carry. The articles of this list are as follows:

Fluid Extract of Aconite Root.
" " American Hellebore, or Veratrum Viride.
" " Aromatic Powder.
" " Belladonna Leaf.
" " Belladonna Root.
" " Buckthorn Bark.
" " Digitalis.
" " Ergot.
" " Gelsemium.
" " Indian Hemp.
" " Ipecacuanha.
" " Licorice Root.
" " Nux Vomica.
" " Podophyllum.
" " Rhatany.
" " Rhubarb.
" " Senna Compound.
" " Valerian.
Solution of Chloral, one grain to the minim.
Solution of Sulphate of Morphia, Magendie's, $\frac{1}{30}$th of a grain to the minim.
Solution of Sulphate of Atropia, 4 grains to the fluid ounce.
" " Quinia, $\frac{1}{8}$th of a grain to the minim.
" " Zinc, 10 grains in 80 minims.
" Subsulphate of Iron.
Compound Tincture of Ipecacuanha, each minim equal to one grain of Dover's Powder.
Deodorized Tincture of Opium.
Compound Solution of Opium.
" Tincture of Opium, or Diarrhœa Mixture.
" Spirit of Ether, or Hoffman's Anodyne.
Purified Chloroform.
Tincture of Chloride of Iron.
Pills of Aloes and Mastic, Lady Webster's Dinner Pills.
" Arsenious Acid, $\frac{1}{50}$th of a grain in each pill.
" Opium, 1 grain each.
" Sulphate of Quinia, 3 grains each, or 2 grains each, or 1 grain each.
Compound Cathartic Pills.
Mercurial, or Blue Pills.
Podophyllum, or May-Apple Pills.
Compound Pills of Scammony, or Triplex Pills.
Nitrite of Amyl.
Calomel.
Mercury with Chalk.

All pills should be carried in short, wide vials, as the longer and narrower ones, being intended for liquids only, will not admit pills. Indeed, it will be generally found most convenient to carry everything in liquid form so far as possible, and to have a separate case for pills and powders when these are carried.

To facilitate dispensing at the bedside, the compound powder of ipecacuanha, or Dover's powder, is here offered in a liquid form. Perhaps few articles are more frequently desired at the bedside, particularly at late evening visits, than a Dover's powder; and when the physician has it in his pocket in a fluid form, with the means of easily and accurately dispensing it, he can often command a night of repose with very little trouble. This preparation is made by repercolation from the officinal ingredients, except the sulphate of potassa, in the officinal proportions, by the use of diluted alcohol as a menstruum, or by mixing deodorized tincture of opium with fluid extract of ipecacuanha in proper proportions, and evaporating the mixture by a water-bath until each ten minims represents one grain each of powdered opium and ipecacuanha.

Many of the articles of the above list are therapeutic alternates or duplicates, but they are offered to conciliate individual preferences, and future experience may lead to the dropping of some of them, and the substitution of other articles. Such preparations as the fluid extracts of aromatic powder, and of licorice root, cannot be considered as necessities in any other sense than because their use as corrigents will often enable the dilutions of other more active medicines to be given to children and sensitive persons with less difficulty. The skilful use of such corrigents by physicians and pharmacists would tend to free them from the "elixir" nuisance.

There is nothing whatever about these supposed improvements in pocket-cases that is of a proprietary character, and the writer deprecates the use of his name in connection with them. Those who make graduated measures will make the minim pipettes for any person who wants them, and the sheet of labels is printed without the name or address of any one, so that they carry no responsibility for the quality or make

of the preparations they cover. The makers of such wares will make the cases for any one who may choose to order them, and make them to order from any class or quality of material and workmanship, and already cheap ones are in the market made of imitation material. In short, any one is at liberty to make them or have them made, and their defects may thus be found out and remedied.

BROOKLYN, September, 1873.

NOTE ON BUYING ALCOHOL OR DISTILLED SPIRITS.

WITH A TABLE AND WOODCUT ILLUSTRATION.

BY EDWARD R. SQUIBB, M.D.

THAT the real interest of the buyer and the seller are the same in all bargains, is a truth long ago proven and illustrated in all social intercourse. Yet the reverse of the proposition is practiced as the common basis of mercantile transactions, even in the present day, of more accurate reasoning and more extended foresight.

This condition of antagonism of interest between buyer and seller must however be accepted, though under protest against the error as one which supports a world of evil upon its broad shoulders. From this error springs the necessity that, from the consumer all the way back to the producer, the buyer must guard his interest *against* the seller; and also the circumstance that the rules and customs of the producer in the sale of his products, are not the safest nor the best for the consumer, whilst the interest of the producer is powerful, compact, and highly educated, in comparison with that of the consumer.

This is notably the case in regard to alcohol and all spirits, and because the producer has always represented the most active and compact interest, his counsels have always prevailed in the schemes which the governments of Great Britain and this country have adopted, for collecting a revenue from spirits. But because the older government clings to, and the

other adopts a plan for collecting the revenue from spirits, which plan is not up to the knowledge of the day, is no reason why the consumer should continue to accept it, without from time to time, as knowledge advances, applying the test for greater accuracy and greater utility; since not even government authority can permanently establish that which is inferior in truth or utility, against the progress of knowledge.

Pursuing the subject of economy in the use and management of alcohol, so often presented to this Association by the writer during past years, he now begs to offer some objections to the common methods of determining quantities in the market for spirits, and to suggest improvements, which if practicable, may tend to harmonize the interests of the consumer and producer, and thus foster the true interests of trade. These suggestions are all based upon controlling quantity, by the simple and easy centesimal plan of Continental Europe. This centesimal or decimal method has, like the metrical system of weights and measures, met with a resistance from the governments of Great Britain and this country, which could hardly have been expected, and with regard to the metrical system, this resistance is only now giving way before that power of advancing knowledge which may be retarded and hindered but cannot be stopped.

Alcohol and water *combine* in all proportions. That is, as the union of the two substances is attended by the development of heat, and by contraction in volume, the result is a *combination* and not a *mixture*. Any given volume of water expands slowly at an unequal rate, as it is either warmed or cooled from its point of maximum density (3.945° C. = 39.101° F., Playfair and Joule), without change in weight. Alcohol also expands at an unequal rate, but it expands or contracts throughout the whole range of known temperatures. That is, it has no known point of maximum density. Its rate of expansion at ordinary temperatures is about five times that of water, and the inequalities or irregularities of its rate of expansion are different from those of water. Beside this, combinations of alcohol and water do not expand at the mean rate deducible from the rates of the two substances, but at a

new rate peculiar to the combinations, or rather perhaps at a new rate peculiar to each combination of the two liquids. All combinations of alcohol and water are commonly called "spirit" or "spirits," and the alcohol of the combinations is the only element of value, and the only thing that is bought or sold, the water being a mere incumbrance that is bought and sold incidentally only. Hence every bargain is in reality for the sale and purchase of a definite quantity of absolute alcohol, and involves some plan of determining this quantity to a practical degree of accuracy; and, whatever plan may be used the result is commonly expressed in percentage, or by the number of hundredths of alcohol which the given combination of alcohol, water, and impurities contains. Two quantities, therefore, have always to be determined to the mutual satisfaction of seller and buyer. First the quantity of the combination, and next the quantity or proportion of alcohol which the combination contains. The circumstances alluded to above render these determinations somewhat complicated, and difficult to understand correctly, thus opening the way to abuses which pass unchallenged for years, and have a strong tendency to grow. So long as the stronger grades of alcohol were bought and sold at the low prices of 40 to 60 cents per gallon, shortages, the sum of which did not exceed 3 or 4 per cent., were not very important, and were suffered, because of the cost of reforming the plans, or through want of intelligence in buyers. But now that the same grades of alcohol cost nearly four times more, the shortages become proportionately important, and it is high time that buyers should so educate themselves as to be able to check and control their quantities if they choose to do so, and have that advantage of knowledge over ignorance, which legitimately and fairly belongs to him who knows his market.

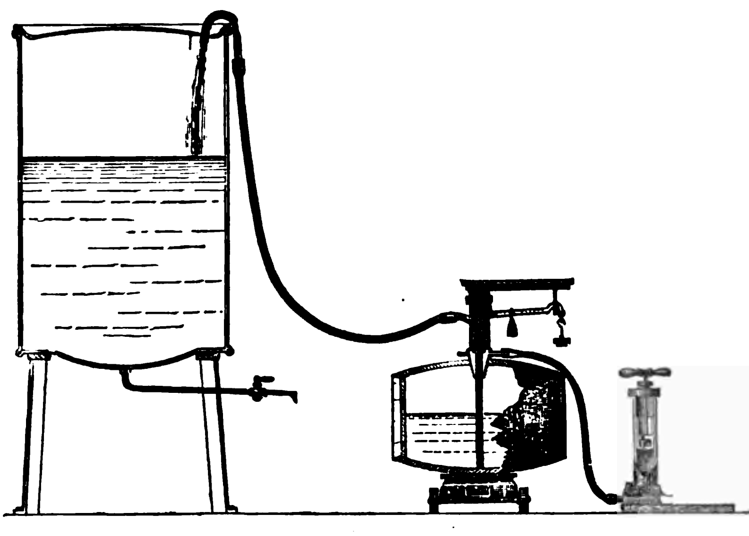
The first determination of quantity, that is, of the quantity of the combination, or so-called mixture of alcohol and water, commonly known as "spirits" or "distilled spirits," or "high wines" or "alcohol," is made by capacity measure, and the result is stated in gallons. This measurement is generally made by gauging, and this gauging of casks and barrels is

generally done by the straight gauge-rod and wantage-rod. Now, apart from the difficulties of temperature and the gauger's method of observing it, there is in this plan of measurement a good chance for many errors, which should not be unknown at the present cost of alcohol. Casks and barrels are not uniform in shape, though the same rule is applied to all. The stave opposite to the bung-stave may be thinner than the other staves. The staves and heads may be either thin or thick, yet must be chamfered down very thin at the chimb, where the gauge-rod touches the angle between stave and head, and the wantage is calculated upon an ideal bilge which can only be realized by accident. Hence, although gauging may be well adapted to the measurement of liquids, the value of which is not above 50 cents per gallon, it is not accurate enough for liquids like whisky, high wines, alcohol, &c., whose value is from 90 cents to $2 per gallon. In other liquids the value of which has increased within the past few years, involving closer dealings and smaller profits, capacity measure is rapidly giving way to weight; and olive oil, linseed oil, castor oil, &c., are now sold and bought by weight, though some are in the transition stage as yet, that is, bargained for by the gallon, yet the number of gallons ascertained by weight on the basis of so many pounds and ounces to the gallon. But even if the plan of gauging be susceptible of the accuracy for which it has general credit and acceptance, no such accuracy has been realized in the experience of the writer, who has for many years been a buyer of alcohol in the common market, and has always measured or weighed it as received. The aggregate result of this experience of many years is that, with occasional rare exceptions of over measure, a large proportion were either correct or less than a half gallon short (which latter was always accepted as correct). But a very considerable proportion of the barrels were from half a gallon to a gallon short, thus making a very constant average loss to the buyer, until a special bargain was made in regard to shortages. This special bargain of late years has been that where any barrel falls short more than half a gallon the whole shortage upon it is claimed and allowed. This

bargain, of course, nets a loss to the buyer, but a loss which has fixed limits. Beside, any such bargain makes a buyer a troublesome customer to the seller, since the latter never knows when he is free from these claims for shortage. Of late years the writer has made all his remeasurements by weight, and the convenience and saving of time and saving of alcohol by this device have been so great, that it can be confidently recommended to all who desire to control or check their quantities. It is only necessary to take the specific gravity of the alcohol by an hydrometer, roll the barrel on to a scale, take its gross weight, empty it into the storage tank, and take the weight of the empty barrel for tare. This yields the net weight, which is easily turned into gallons as follows. The so-called U. S. legal standard gallon is 58,372.1757 grains at 39.83° F., which is equal within practical limits to 58,320 grains at 60° F. Suppose the specific gravity of the alcohol to be 0.817 at 60° F., then the process for accurately determining the weight of a gallon of it at 60° F., would be as follows: As 1.000 (= distilled water at 60° F.) is to 0.817 (= the specific gravity of the alcohol at 60° F.), so is 58,320 (= weight in grains of 1 gallon of distilled water at 60° F.), to 47,647.44 (= weight in grains of 1 gallon of the alcohol at 60° F.). This last number of grains is equal to 6 pounds, 12 ounces, and 397 grains, or practically 6 pounds and 13 ounces, and this being the weight of 1 gallon, it has only to be divided into the total weight of the contents of the barrel to get the number of gallons. The rule for practice deduced from the above process, is simply to multiply the weight of a gallon of water by the specific gravity of the spirit, when the product will be the weight of a gallon of the spirit. To render this plan easily practicable, the writer has calculated the weight of a gallon of spirit for each per cent., both by weight and by volume, and gives the results in a table herewith presented.

Some means of avoiding the loss of time and of alcohol in transferring it from the barrels to the storage tank, was for a long time much needed by the writer. This is of late very satisfactorily accomplished by condensing air on top of the

alcohol in the barrel, by means of a common air syringe, and thus forcing the liquid out through a pipe which leads it into the tank. This simple device is a mere application of the principle of the old "amorce-siphon" of the French, and this application will be best understood by the accompanying woodcut, which has been prepared to illustrate it, the block being offered herewith for the use of the Association, should it see fit to give this paper a place in its proceedings.



A hollow, conical cast-iron bung, made with a screw-thread upon its exterior, such as is in common use to hold the pumps by which petroleum is transferred, is bored and tapped on top and at the side. Into the upper hole is screwed an inch nipple, and into the side hole a three-eighth inch nipple. Through the upper nipple is passed a piece of three-fourths inch block-tin or tinned copper pipe, down to the lowest part of the bilge of the barrel, and the lower end of this pipe is deeply serrated. The upper end is bent at a right angle, and is slipped into an india-rubber tube which leads to the tank. Where this tube passes through the nipple the parts are made air-tight, by

passing through a short section of rubber tubing, which fits tightly upon the tube above, and is stretched over the nipple below. The smaller nipple at the side is connected with a similar nipple on the air syringe, by means of rubber tubing, when the arrangement is complete. If now the iron bung be screwed into the bung-hole of the weighed barrel of alcohol, and the tube be pushed down till it rests upon the stave opposite to the bung-hole, the device is ready for the operation. If the barrel be nearly full a very few strokes of the pump will so compress the air on the surface of the alcohol, as to start the stream out through the central pipe into the tank, and from four to six minutes is sufficient to empty a barrel, and this without the loss of any alcohol, except that which wets the inside of the tubing. When the last of the alcohol is forced into the pipe by the compressed air, the rush of expanding air which follows it, blows out every ounce of alcohol from both barrel and tubing into the tank. A common gas-fitter's air syringe answers well for this purpose, and a wooden bung can be made to answer very well.

The second determination of quantity to be made is the quantity or proportion of alcohol—absolute alcohol—which the given combination or mixture contains, and as the absolute alcohol is the real and only object of the buyer, this determination is very important, since the seller may wish to sell water at the price of alcohol if he can. At the present ruling rates for spirits in the market, each 1 per cent. or each hundredth part by weight of absolute alcohol is worth about 2 cents; a little less for the weaker spirits, and a little more for those containing over 92 per cent., but about 2 cents as an average from about 95 per cent. downward. Hence errors of 1 per cent. in strength involve differences of 2 cents per gallon in value. Then as apparent strength varies with temperature to the extent of about 1 per cent. for each 3° C. or 5½° Fahr., on an average throughout the whole range of the combinations, but amounts to nearly 1 per cent. for each 1° C. = 1.8° F. throughout the middle and stronger part of the range. Such differences of temperature are equal to about 2 cents per gallon, also, by the expansion produced.

The common method of determining strength, or the proportion of absolute alcohol, is by an hydrometer of metal or glass with an arbitrary scale, which denotes, not simple percentage, but a compound or complicated percentage, expressed in degrees above or below proof. This plan is so complex, that for the most part its rules have to be empirically followed without being understood, and its expression of results is so difficult to translate into the simple decimal proportions of hundredth parts, that had it been intended to confuse and mislead the millions of consumers for the advantage of the few thousands of experts who represent the producers, it could hardly have been better constructed. And from this comes the fact, that the masses of mankind who are interested in alcoholic liquids are so ignorant in regard to them; and therefore so careless and so easily deceived. Another circumstance which adds to the popular confusion in regard to the strength of alcoholic liquids, is the use of the term "percentage" and often "true percentage," to indicate two very widely different ratios of strength. The words "per centum," "by the hundred," in their meaning apply equally to computations by weight or by volume, but by general consent and common usage, the term per cent. when not qualified means per cent. by weight, that is, the number of pounds, ounces or grains in the hundred, or a decimal relation by weight only, unless the sense forbids this, as in cases of tale or count. The reason for its general acceptance as a relation by weight appears to be that this idea is far the most simple, and most easily understood, and must always be the basis of all accurate computations. In its application to alcoholic liquids, however, it generally, though not always, indicates volumes, that is, 95 per cent. alcohol generally means a combination which contains 95 volumes of absolute alcohol in the 100 volumes of the combination. But as a given volume of absolute alcohol weighs less than eight tenths of the same volume of water at the same temperature, this 95 per cent. by volume becomes about 92 per cent. by weight. Thus the expressions, though differing by about 3 per cent., are equally true for the same thing, whilst the lower is the best and most simple relation.

The higher, however, suits the seller best, and is often spoken of as "the true percentage" without the qualification "by volume." Now as specific gravity must always be the basis of every method of determining strength, and as this is and must always be a simple relation by weight, the volume remaining constant, the sooner all other relations are rejected the better. Hence this determination of quantity, which must always be made by specific gravity, that is, by weight, should only be expressed in the terms in which it is made, namely, by weight; and all degrees, whether of any arbitrary scale, as that of Baumé, or above or below proof, or percentage by volume, should be discouraged and disused as rapidly as possible.

The disturbing influence of temperature is also a grave complication in this determination of strength, since, as above stated, an average of about 3° C. = $5\frac{1}{2}$° F., is equal to about 1 per cent. or 2 cents per gallon for the stronger grades of alcohol. Observations must be made within this limit of temperature, therefore, to get within 1 per cent. of true strength. Most determinations and researches have been made and most tables are constructed for a temperature of 60° F. = $15\frac{5}{9}$° C., and hence corrections for temperature are indispensable to any useful degree of accuracy. Such corrections are difficult and complicated except when made by tables, and convenient and compact tables are rarely at hand, so that the best and most convenient plan is to bring the liquid to a given temperature in order to make the determination. The standard temperature of 60° F. = $15\frac{5}{9}$° C. is not a natural one for living-rooms or even for storehouses, and it is quite impracticable to reduce a sample from each barrel to such a temperature within a reasonable time. But if an equivalent for the standard temperature be adopted, and this be about the average temperature of liquids throughout the year in the houses of temperate climates, but certainly above this rather than below it, then a sample of liquid might be always quickly and easily brought to such a temperature by the warmth of the hand on the outside of the sample jar. About such a temperature the writer has found at 25° C. = 77° F. Now

if the readings of an hydrometer be known for these two temperatures, namely, $15\frac{5}{9}°$ C. = 60° F. and 25° C. = 77° F., in the same liquid, then of course the two readings are equivalent, and it does not matter, in an everyday practical sense, whether the liquid be cooled down to the lower temperature or warmed up to the higher. For example, it is known that a given combination of absolute alcohol and water has a specific gravity of 0.8172 at $15\frac{5}{9}°$ C. = 60° F., and that this is equivalent to 92 per cent. by weight of absolute alcohol. Now, if this liquid be warmed up to 25° C. = 77° F. it will show by the same hydrometer an apparent specific gravity of 0.8091. Now, if an unknown sample of spirit give the latter reading at the latter temperature, the reading for the standard temperature would be equally known, and therefore, the strength would be 92 per cent. by weight.

The great drawback to a more common use of specific gravity as an indication of strength in liquids, is the difficulty or inconvenience of reducing the temperature to the low standard of 60° F., which has been of late years universally adopted, because the cooling of liquids down to that temperature is always tedious and troublesome, and during a large portion of the year is impracticable without the use of ice. But when the practical need and value of a test of strength which is so widely and so generally applicable is considered, it seems well worth while to attempt to overcome this great drawback, that the more frequent and common use of specific gravity may be encouraged in the hands of consumers.

In order to favor this, and to awaken buyers of spirits and alcohol who buy for consumption or actual use, to a little more intelligence and practical economy in the management of their interests in this important commodity, the writer has constructed a general table, not scientifically accurate, but sufficiently accurate for everyday practical use, and offers it herewith.

To get some facts as to the necessity for more knowledge as to what is bought for "95 per cent. alcohol" by those who really intend to have that grade of strength, the writer sent to twenty first-class pharmacists and druggists, and bought

one or two pints of their best and strongest alcohol without regard to cost. The wholesale houses very generally charged 40 cents a pint, though sometimes 50 cents, while the retailers generally charged 50 cents. One wholesale house charged 35 cents, so that the intention to have and to sell the very strongest was very apparent. One sample only approached as near as 94¼ per cent. by volume. Specific gravity 0.8175 at 15⅝° C. = 60° F. Two other samples gave 0.8190, or a little more than 94 per cent. by volume. Ten were between 93 and 93¾ per cent. by volume, and seven were between 92½ and 93 per cent. by volume.

EXPLANATION OF TABLE.

This Table has no claim to scientific accuracy or precision, but only aims to be moderately correct to within one-half of one per cent. The maximum error for the readings of any single lines across the Table is scarcely more than one-quarter of one per cent.; but in some few instances where one line is compared with the next below it, the sum of the two errors will reach one-half of one per cent. In the columns for specific gravity the figure of the fourth decimal place is given only to qualify the value of the figure of the third decimal place; that is, when the figure of the fourth or last decimal place is 4, or less than 4, the three preceding figures are to be read and accepted as they stand. But when the figure of the fourth decimal place is 5, or is greater than 5, the figure of the third place is to be increased by 1.

As the hydrometers and thermometers of the ordinary market, with which the Table must be used, do not approach precision nearer than one-half of one per cent., all that could be very practically useful in the Table would be to get within their range of error. At least this is all that has been attempted.

So far as regards the relation between specific gravities and percentage, the Table is a mere compilation or copy from various good authorities, but as these authorities do not agree upon the starting-point, namely, the specific gravity of absolute alcohol, of course their Tables do not agree with precision

when placed beside each other. Indeed it is very doubtful whether any of the authorities have yet obtained absolute alcohol; and therefore more accurate research upon this point is needed. The table of Fownes gives the specific gravity of anhydrous or absolute alcohol as 0.7938; that of Tralles gives it as 0.7946, both at $15\frac{5}{9}°$ C. = 60 F., and both as compared with pure water at the same temperature taken as unity. More recent investigation gives a lower density, and the writer has frequently seen it as low as 0.7934, but no tables have been constructed upon these better data.

As the Table is a long one, it is for convenience of reference divided into seven parts, each embracing a grade of spirits used for different purposes. The first and second parts are for weak liquors, the third for low wines, the fourth for whiskies, brandies, &c., the fifth and sixth for high wines, and the seventh for alcohol.

Although revised with care, and the voluminous calculations checked, and the results reviewed by their differences, it is yet not improbable that slight errors may have escaped detection.

The first column of the table contains the specific gravities at $15\frac{5}{9}°$ C. = 60° F., compared with pure water at the same temperature taken as unity, for spirit of every degree of strength, by the four scales or methods of stating strength now in common use, namely, percentage by weight, percentage by volume, percentage under and over proof, and percentage of proof spirit. The specific gravities for percentage by weight are copied literally from a table by Fownes, given in his Manual of Elementary Chemistry, Amer. edition of 1869, p. 830. These are believed to be most accurate and trustworthy.

The specific gravities for percentage by volume are given from Watts's Dictionary of Chemistry, vol. 1, p. 84, *et seq.*, where they are quoted as determined by Tralles from the observations of Gilpin. This table is less trustworthy than that of Fownes only in adopting too high a specific gravity for anhydrous alcohol. It is not literally copied here; but where its specific gravities were within two or three-tenths of

one per cent. of being the same as those of Fownes, they were accepted as being practically in accord with Fownes, and his figures were allowed to represent them in order to condense the Table.

The specific gravities for percentage under and over proof are partly copied and partly deduced by interpolation from a table of Dr. Ure, given in his Dictionary of Arts, Manufactures, and Mines, Eng. edition of 1860, vol. 1, pp. 57 and 58. This method of stating the percentage under or over proof is that adopted by the British Board of Excise, and it is applied by Sykes's hydrometer. In Dr. Ure's table, however, 0.9200 is given as the specific gravity of proof spirit, while in his text at p. 44 it is given on the authority of Drinkwater as 0.919. This table of Dr. Ure is not copied literally, but his figures are altered to coincide with those of Fownes and Tralles, wherever the values are not affected beyond the limit of error admitted in the design of this Table as above stated.

The specific gravities for percentage of proof spirit are taken from the Manual for Gaugers of Spirits, published by authority of the Treasury Department of the United States in 1870. This is the method of stating strength which is used by the United States Internal Revenue Department; and it is peculiar in introducing a new strength and definition for the term "proof spirit," namely, "that alcoholic liquor which contains one-half its volume of alcohol of a specific gravity of .7939 at 60° Fahrenheit." The specific gravity of such proof spirit is stated to be .93353 at 60° F. Water at its maximum density being taken as unity. The British legal definition of "proof spirit," describes it as "such as shall, at the temperature of fifty-one degrees of Fahrenheit's thermometer, weigh exactly twelve-thirteenth parts of an equal measure of distilled water." The specific gravity of this "proof spirit" is stated to be .919 at 60° F. This latter is the older and long-accepted proof spirit, and it is probable that few who use the term "proof spirit" in this country know that it has been legally applied to an inferior strength. The old commercial usage of quoting price upon "proof" strength, and increasing or diminishing this by percentage as this spirit is above or below

"proof," is the chief argument for this method. This method also introduces a very peculiar use of language in such expressions as "one hundred and eighty per cent." That is, one hundred and eighty to the hundred; the greater included within the less. This Table III of the Government Manual is not copied literally, but is treated in the same manner as that for percentage under and over proof, in making numbers which are of nearly the same value read as though they were in actual coincidence.

The specific gravities given in the second column of the Table, namely, those at 25° C. = 77° F., are deduced by applying to the specific gravities of the first column, the differences for temperature given in a table quoted from Tralles in Watts's Dictionary of Chemistry, vol. 1, p. 88, the deficiencies in the table quoted being supplied by interpolation. Though this column cannot be entirely trustworthy, its range of error is in all probability well within that of ordinary hydrometers, or even specific-gravity bottles; and is within the moderate degree of accuracy claimed for the entire Table.

The seventh column of the Table is the weight in grammes of one gallon of spirit of all the various strengths, at $15\frac{5}{9}°$ C. = 60° F. This and all the succeeding columns are given upon the authority of the writer. The laborious calculations involved were made at such intervals as could be taken from an active business. But as they have been re-examined and checked by more competent arithmeticians, it is hoped that they may be free from serious practical errors.

The first step was to ascertain the weight of a gallon of distilled water at $15\frac{5}{9}°$ C. = 60° F. This, which was at first supposed to be only difficult, proved in the end to be impossible, because no U. S. law could be found establishing the standard gallon, and after careful inquiry at Washington, it is believed that no such law is in existence. Various authorities, however, give the value of what they call the U. S. legal gallon, as 231 cubic inches, or 58372.1757 grains of pure water at its maximum density of 39.83° F. As this temperature is not that of the maximum density of water, but rather 3.945° C. = 39.101° F., as determined by Playfair and Joule, there

must be a small error from temperature in this determination. It was, however, accepted as the best attainable authority. It next became necessary to get the weight of this gallon at the temperature of $15\frac{5}{9}$° C. = 60° F. This has been frequently determined and published at different values, varying within a range of ten grains. This was too great a diversity even for the low degree of accuracy aimed at in the design of this Table, and therefore a new determination from more modern data was undertaken. In Poggendorff's Annalen, vol. 72, p. 1 to 223, Kopp has given a more accurate table of the expansion of water by heat than had been before attained. Applying his results to the so-called U. S. legal gallon, the weight of pure water at $15\frac{5}{9}$° C. = 60° F. (without correction for difference in density or displacement for either weights or air between this temperature and that given as the maximum density of water), is 58319.5714 grains. When this deduced weight of the so-called standard gallon is checked by the new weight of the cubic inch of water, as corrected from the determinations of Captain Kater by Prof. F. A. P. Barnard (see "The Metric System, by F. A. P. Barnard," 1872, p. 167), it is found to be, though not with scientific precision in accordance with this latest good authority, yet sufficiently near for the purposes of this Table. It is, therefore, accepted as being practically correct, although it is from 7 to 10 grains less than the weight given by good authorities. For the use of this Table, 58320 grains is adopted as being true to the nearest grain, and the eighth column of the table, or the weight of one gallon at $15\frac{5}{9}$° C. = 60° F. in grains, is obtained by multiplying the specific gravities at $15\frac{5}{9}$° C. = 60° F. by 58320, and accepting the nearest grain for the final figure. The seventh column, or the weight of one gallon at $15\frac{5}{9}$° C. = 60° F. in grammes, is obtained by dividing the weight in grains by 15.432, or the value of a gramme in grains.

The ninth, tenth, and eleventh columns, are together equivalent to the eighth column, the grains being here expressed in the commercial avoirdupois weight of pounds, ounces, and grains.

The twelfth and thirteenth columns, taken together, give the avoirdupois pounds and ounces to the nearest ounce.

The thirteenth column gives the weight to the nearest half pound of forty gallons at $15\frac{5}{9}°$ C. = 60° F. It is obtained by multiplying the figures of the eighth column by 40, and reducing the grains to pounds.

The fourteenth column is the weight of a pint at $15\frac{5}{9}°$ C. = 60° F. in grammes; and the fifteenth is the weight of the same quantity, at the same temperature, in grains. These columns are obtained by dividing the figures of the seventh and eighth columns by 8.

USE OF THE TABLE.

This Table is susceptible of being used for many purposes and in many ways, since any quantity of any column being known, the corresponding quantities in all the other columns may be known by simple inspection. For example, if a spirit be known to contain 52 per cent. of absolute alcohol by weight, by seeking out this number in the column of percentage by weight, it will be found to contain 60 per cent. by volume; or to be 5 per cent. over proof; or to contain 120 per cent. of proof spirit. Its specific gravity at $15\frac{5}{9}°$ C. = 60° F. will be 0.9135, or at 25° C. = 77° F. will be 0.9056. The weight of a gallon, at the standard temperature given, will be 3452.24 grammes, or 53275 grains, or 7 lbs. 9 oz. 338 grains, or, practically, 7 lbs. 10 oz. The weight of 40 gallons, at the standard temperature, will be 304.5 lbs., and the weight of one pint will be 431.53 grammes, or 6659 grains.

One of the chief uses of the Table, however, is to verify or control the uncertain and difficult process of measuring by volume by the more easy and accurate process of measuring by weight; and of determining the true proportion of absolute alcohol by weight. In order to use it for such purposes, an hydrometer and jar, and a thermometer, are necessary. Let a sample be taken from the barrel by means of a thief, or a small rubber-tubing siphon into the hydrometer jar. Then, if the hydrometer be—as it should be—one with a

specific-gravity scale, and adjusted for $15\frac{5}{9}$° C. = 60° F., the sample may be either cooled down to this temperature, or, what is much more convenient and easy, be warmed up by the warmth of the hand to 25° C. = 77° F. This adjustment of the temperature is greatly accelerated by stirring the liquid with the long tubular thermometer, and the hand that warms the glass should grasp it round the lower part of the cylinder. If the hydrometer to be used indicates, instead of specific gravities, simply percentage by weight, or percentage by volume, or percentage over and under proof, or percentage of proof spirit, then the temperature must be adjusted to that given on the stem of the instrument. The hydrometer is then placed in the liquid and carefully read. That column of the table to which the hydrometer belongs is then sought, and when the figure which corresponds to the reading is found, all the required data will be found upon the same line.

For example: Suppose the spirit from a barrel, when warmed up to 25° C. = 77° F., be found to have, by the second column, an apparent sp. gr. of 0.9056, then its true sp. gr. would be 0.9135, it would contain 52 per cent. by weight, or 60 per cent. by volume of absolute alcohol, would be 5 per cent. over proof, or would contain 120 per cent. of U. S. proof spirit. A gallon of it at standard temperature would weigh 3452.24 grammes, or 53275 grains, or 7 lbs. 9 oz. 338 grains, or practically 7 lbs. 10 oz.; and 40 gallons of it would weigh $304\frac{1}{2}$ lbs. Now suppose the barrel to weigh 389 lbs. gross, and to have a marked or ascertained tare of 61 lbs., giving a net weight of 328 lbs. of spirit. Then the weight of 40 gallons, namely, $304\frac{1}{2}$ lbs., subtracted from this would leave a remainder of $23\frac{1}{2}$ lbs., which is 10 oz. more than three times the weight of a single gallon of 7 lbs. 10 oz. Therefore, the barrel would contain practically 43 gallons and about $\frac{3}{4}$ pint, this latter fraction being disregarded. And this would be the actual precise measure at the standard temperature, no matter at what temperature the spirit might be when weighed. If several or many barrels had to be measured or verified, and the tares of the barrels not known, it would only be necessary to start with one

empty barrel, and then pass the spirit by a siphon or pump from one barrel to another until all the tares were obtained. With an established custom of using barrels with marked tares, the verification would of course be much more simple and easy. Even if every package has to be emptied to obtain the tares, the verification by weight is far quicker, and far less wasteful, as well as more accurate, than by measuring, thus saving much time, and expense, and loss, in cases of disputed gauging in the spirit market.

If the hydrometer in use indicates strength by any of the scales given in the Table other than by specific gravity, and the sample be cooled to the temperature given on the instrument, it is of course used in the same way by looking for its indication in its appropriate column.

The consumer who buys his alcohol or spirit in smaller quantities, can still more easily verify his purchases by the use of tared vessels. And when the time comes that the absolute alcohol in any spirit shall be sold by the pound, the whole matter of control will be very plain and simple, and all true interests be best subserved.

In the use of the Table by the pharmacist to control the results of repercolation for making fluid extracts, the weight of the pint of menstruum of all strengths will be found very useful. It will also be useful to those who have substituted weights for measures in the use of alcoholic liquids in making tinctures, &c.

BROOKLYN, September, 1873.

TABLE FOR DISTILLED SPIRITS AND ALCOHOL.

PART I.—From 0 to 10 per cent. of Absolute Alcohol.

Specific Gravity. (Pure water at $15\frac{5}{9}$° C.—60° F. taken as unity.) At $15\frac{5}{9}$° C. —60° F.	At 25° C.—77° F.	Percentage. By weight.	By volume.	Under proof. (Brit. Excise.)	Of proof spirit. (U.S. Revenue.)	Weight of one gallon, at $15\frac{5}{9}$° C.—60° F. In Grammes.	In Grains.	Avoirdupois Weig't. lbs	ozs	Grs.	To the nearest ounce. lbs.	ozs.	Weight of 40 gallons to the nearest half pound, at $15\frac{5}{9}$° C.—60° F lbs.	Weight of one pint, at $15\frac{5}{9}$° C.—60° F. In Grms.	In Grs.
1.0000	0.9986					3779.13	58,320	8	5	132	8	5	333.5	472.39	7290
0.9993	0.9978			99	1	3776.50	58,279	8	5	91	8	5	333.0	472.06	7285
0.9985	0.9970		1	98	2	3773.46	58,232	8	5	44	8	5	332.5	471.68	7279
0.9981	0.9966	1				3771.97	58,209	8	5	22	8	5	332.5	471.49	7276
0.9976	0.9961			97	3	3770.08	58,180	8	4	430	8	5	332.5	471.26	7272
0.9970	0.9953		2		4	3767.82	58,145	8	4	395	8	5	332.0	470.98	7268
0.9968	0.9951			96		3767.04	58,133	8	4	383	8	5	332.0	470.88	7267
0.9965	0.9948	2			5	3765.94	58,116	8	4	366	8	5	332.0	470.74	7264
0.9960	0.9943			95		3764.06	58,087	8	4	337	8	5	332.0	470.51	7261
0.9956	0.9938		3		6	3762.51	58,063	8	4	313	8	5	332.0	470.31	7258
0.9952	0.9934			94		3761.02	58,040	8	4	290	8	5	331.5	470.13	7255
0.9947	0.9927	3			7	3759.14	58,011	8	4	261	8	5	331.5	469.89	7251
0.9944	0.9924			93		3757.97	57,993	8	4	243	8	5	331.5	469.75	7249
0.9942	0.9922		4		8	3757.26	57,982	8	4	232	8	5	331.5	469.66	7248
0.9936	0.9916			92	9	3754.99	57,947	8	4	197	8	4	331.0	469.37	7243
0.9930	0.9909	4	5	91	10	3752.72	57,912	8	4	162	8	4	331.0	469.09	7239
0.9921	0.9900			90	11	3749.29	57,859	8	4	109	8	4	330.5	468.66	7232
0.9914	0.9893	5	6	89	12	3746.63	57,818	8	4	68	8	4	330.5	468.33	7227
0.9906	0.9885			88	13	3743.65	57,772	8	4	22	8	4	330.0	467.95	7221
0.9900	0.9879			87		3741.38	57,737	8	3	424	8	4	330.0	467.67	7217
0.9898	0.9876	6	7		14	3740.60	57,725	8	3	413	8	4	330.0	467.58	7216
0.9892	0.9870			86	15	3738.33	57,690	8	3	377	8	4	329.5	467.29	7211
0.9890	0.9868		8		16	3737.56	57,678	8	3	366	8	4	329.5	467.19	7210
0.9885	0.9863			85		3735.68	57,649	8	3	336	8	4	329.5	466.96	7206
0.9884	0.9862	7			17	3735.29	57,643	8	3	331	8	4	329.5	466.91	7205
0.9878	0.9855		9	84	18	3733.02	57,608	8	3	296	8	4	329.0	466.63	7201
0.9872	0.9849			83	19	3730.82	57,574	8	3	261	8	4	329.0	466.35	7197
0.9869	0.9846	8	10		20	3729.65	57,556	8	3	243	8	4	329.0	466.21	7194
0.9864	0.9841			82	21	3727.77	57,527	8	3	214	8	3	328.5	465.97	7191
0.9857	0.9834			81		3725.12	57,486	8	3	173	8	3	328.5	465.64	7186
0.9855	0.9831	9	11		22	3724.34	57,474	8	3	161	8	3	328.5	465.54	7184
0.9852	0.9828			80	23	3723.24	57,457	8	3	144	8	3	328.5	465.40	7182
0.9845	0.9821			79		3720.58	57,416	8	3	103	8	3	328.0	465.07	7177
0.9841	0.9816	10	12		24	3719.09	57,393	8	3	81	8	3	328.0	464.89	7174

TABLE FOR DISTILLED SPIRITS AND ALCOHOL (*continued*).

PART II.—From 10 to 25 per cent. of Absolute Alcohol.

Specific Gravity. (Pure water at $15\frac{5}{8}$° C.—60° F. taken as unity.) At $15\frac{5}{8}$° C.—60° F.	Specific Gravity. At 25° C.—77° F.	Percentage. By weight.	Percentage. By volume.	Percentage. Under proof. (British Excise.)	Percentage. Of proof spirit. (U. S. Revenue.)	Weight of one gallon, at $15\frac{5}{8}$° C.—60° F. In Grammes.	Weight of one gallon. In Grains.	Avoirdupois Weig't. lbs	Avoirdupois Weig't. ozs.	Avoirdupois Weig't. Grs.	To the nearest ounce. lbs	To the nearest ounce. ozs	Weight of 40 gallons to the nearest half pound, at $15\frac{5}{8}$° C.—60° F lbs.	Weight of one pint, at $15\frac{5}{8}$° C.—60° F. In Grms.	Weight of one pint. In Grs.
0.9838	0.9813			78	25	3717.92	57,375	8	3	62	8	3	328.0	464.74	7172
0.9831	0.9806			77	26	3715.27	57,334	8	3	21	8	3	327.5	464.41	7167
0.9828	0.9801	11	13		27	3714.17	57,317	8	3	5	8	3	327.5	464.27	7165
0.9825	0.9798			76		3713.00	57,299	8	2	424	8	3	327.5	464.13	7162
0.9821	0.9793		14		28	3711.51	57,276	8	2	401	8	3	327.5	463.94	7159
0.9819	0.9791			75		3710.73	57,264	8	2	389	8	3	327.0	463.84	7158
0.9815	0.9787	12	15		29	3709.24	57,241	8	2	366	8	3	327.0	463.65	7155
0.9813	0.9785			74	30	3708.46	57,229	8	2	354	8	3	327.0	463.56	7154
0.9807	0.9779			73	31	3706.19	57,194	8	2	319	8	3	327.0	463.27	7149
0.9802	0.9773	13	16	72	32	3704.32	57,165	8	2	290	8	3	326.5	463.04	7146
0.9794	0.9765			71	33	3701.33	57,119	8	2	244	8	3	326.5	462.67	7140
0.9789	0.9759	14	17	70	34	3699.33	57,089	8	2	214	8	2	326.0	462.42	7136
0.9784	0.9754			69	35	3697.51	57,060	8	2	185	8	2	326.0	462.19	7132
0.9778	0.9746	15	18	68	36	3695.24	57,025	8	2	150	8	2	326.0	461.90	7128
0.9775	0.9743				37	3694.14	57,008	8	2	123	8	2	326.0	461.77	7126
0.9772	0.9740			67	38	3692.97	56,990	8	2	115	8	2	325.5	461.62	7124
0.9766	0.9733	16	19	66	39	3690.71	56,955	8	2	80	8	2	325.5	461.34	7119
0.9760	0.9726		20	65	40	3688.44	56,920	8	2	45	8	2	325.5	461.05	7115
0.9753	0.9719	17	21	64	41	3685.78	56,879	8	2	4	8	2	325.0	460.72	7110
0.9749	0.9715			63	42	3684.29	56,856	8	1	418	8	2	325.0	460.54	7107
0.9743	0.9709			62	43	3682.02	56,821	8	1	383	8	2	324.5	460.25	7103
0.9741	0.9706	18	22		44	3681.31	56,810	8	1	373	8	2	324.5	460.16	7101
0.9737	0.9702			61	45	3679.76	56,786	8	1	348	8	2	324.5	459.97	7098
0.9732	0.9697			60	46	3677.88	56,757	8	1	319	8	2	324.5	459.73	7095
0.9728	0.9692	19	23	59	47	3676.39	56,734	8	1	297	8	2	324.0	459.55	7092
0.9720	0.9684			58	48	3673.27	56,687	8	1	249	8	2	324.0	459.16	7086
0.9716	0.9678	20	24		49	3671.85	56,664	8	1	227	8	2	324.0	458.98	7083
0.9714	0.9676			57	50	3671.07	56,652	8	1	214	8	1	323.5	458.88	7081
0.9709	0.9668		25	56		3669.19	56,623	8	1	186	8	1	323.5	458.65	7078
0.9704	0.9661	21		55	51	3667.31	56,594	8	1	157	8	1	323.5	458.41	7074
0.9698	0.9655		26	54	52	3665.05	56,559	8	1	122	8	1	323.0	458.13	7070
0.9693	0.9650				53	3663.17	56,530	8	1	92	8	1	323.0	457.90	7066
0.9691	0.9646	22	27	53	54	3662.39	56,518	8	1	81	8	1	323.0	457.80	7065
0.9683	0.9638			52	55	3659.36	56,471	8	1	33	8	1	322.5	457.42	7059
0.9678	0.9631	23	28	51	56	3657.47	56,442	8	1	5	8	1	322.5	457.18	7055
0.9671	0.9624			50	57	3654.81	56,401	8	0	401	8	1	322.5	456.85	7050
0.9665	0.9617	24	29	49	58	3652.54	56,366	8	0	366	8	1	322.0	456.57	7046
0.9658	0.9610			48	59	3649.88	56,325	8	0	325	8	1	322.0	456.24	7041
0.9652	0.9603	25	30	47	60	3647.62	56,290	8	0	290	8	1	321.5	455.95	7036

TABLE FOR DISTILLED SPIRITS AND ALCOHOL (*continued*).

PART III.—From 25 to 40 per cent. of Absolute Alcohol.

Specific Gravity. (Pure water at $15\frac{5}{9}$° C.—60° F. taken as unity.) At $15\frac{5}{9}$° C.—60° F.	At 25° C.—77° F.	Percentage. By weight.	By volume.	Under proof. (British Excise.)	Of proof spirit. (U. S. Revenue)	Weight of one gallon, at $15\frac{5}{9}$° C.—60° F. In Grammes.	In Grains.	Avoirdupois Weig't. lbs	ozs	Grs.	To the nearest ounce. lbs	ozs	Weight of 40 gallons to the nearest half pound, at $15\frac{5}{9}$° C.—60° F lbs.	Weight of one pint at $15\frac{5}{9}$° C.—60° F. In Grms.	In Grs.
0.9645	0.9597			46	61	3645.02	56,250	8	0	250	8	1	321.5	455.63	7031
0.9643	0.9594		31		62	3644.24	56,238	8	0	238	8	1	321.5	455.53	7030
0.9638	0.9590	26		45	63	3642.37	56,209	8	0	209	8	0	321.0	455.30	7026
0.9631	0.9582		32	44	64	3639.71	56,168	8	0	168	8	0	321.0	454.96	7021
0.9623	0.9574	27		43	65	3636.66	56,121	8	0	121	8	0	320.5	454.58	7015
0.9618	0.9567		33	42	66	3634.79	56,092	8	0	92	8	0	320.5	454.35	7011
0.9609	0.9556	28	34	41	67	3631.42	56,040	8	0	40	8	0	320.0	453.93	7005
0.9602	0.9549			40	68	3628.76	55,999	7	15	436	8	0	320.0	453.59	7000
0.9595	0.9542			39	69	3626.10	55,958	7	15	395	8	0	320.0	453.26	6995
0.9593	0.9538	29	35		70	3625.33	55,946	7	15	383	8	0	319.5	453.17	6993
0.9587	0.9532			38	71	3623.06	55,911	7	15	348	8	0	319.5	452.88	6989
0.9578	0.9521	30	36	37	72	3619.69	55,859	7	15	296	8	0	319.0	452.46	6982
0.9572	0.9515			36	73	3617.42	55,824	7	15	261	8	0	319.0	452.18	6978
0.9565	0.9507		37	35		3614.76	55,783	7	15	220	8	0	319.0	451.84	6973
0.9560	0.9500	31			74	3612.88	55,754	7	15	191	7	15	318.5	451.61	6969
0.9555	0.9495			34	75	3611.03	55,725	7	15	162	7	15	318.5	451.38	6966
0.9550	0.9489		38	33	76	3609.12	55,696	7	15	133	7	15	318.0	451.14	6962
0.9544	0.9482	32			77	3606.86	55,661	7	15	98	7	15	318.0	450.86	6958
0.9539	0.9577			32		3604.91	55,631	7	15	68	7	15	318.0	450.61	6954
0.9535	0.9473		39		78	3603.42	55,608	7	15	45	7	15	318.0	450.43	6951
0.9528	0.9465	33		31	79	3600.76	55,567	7	15	4	7	15	317.5	450.09	6946
0.9519	0.9456		40	30	80	3597.39	55,515	7	14	390	7	15	317.0	449.67	6939
0.9511	0.9446	34		29	81	3594.35	55,468	7	14	343	7	15	317.0	449.29	6933
0.9503	0.9438		41	28	82	3591.30	55,421	7	14	296	7	15	316.5	448.91	6928
0.9495	0.9430			27	83	3588.32	55,375	7	14	250	7	15	316.5	448.54	6922
0.9490	0.9424	35	42		84	3586.44	55,346	7	14	221	7	15	316.0	448.30	6918
0.9485	0.9419			26		3584.56	55,317	7	14	192	7	14	316.0	448.07	6915
0.9475	0.9409			25	85	3580.74	55,258	7	14	133	7	14	316.0	447.59	6907
0.9470	0.9402	36	43		86	3578.86	55,229	7	14	104	7	14	315.5	447.36	6904
0.9465	0.9397			24		3576.98	55,200	7	14	75	7	14	315.5	447.12	6900
0.9455	0.9387			23	87	3573.22	55,142	7	14	17	7	14	315.0	446.65	6893
0.9452	0.9382	37	44		88	3572.06	55,124	7	13	437	7	14	315.0	446.51	6890
0.9446	0.9376			22	89	3569.79	55,089	7	13	401	7	14	315.0	446.22	6886
0.9434	0.9363	38	45	21	90	3565.25	55,019	7	13	331	7	14	314.5	445.66	6877
0.9426	0.9355			20	91	3562.21	54,972	7	13	284	7	14	314.0	445.28	6871
0.9416	0.9343	39	46	19	92	3558.45	54,914	7	13	226	7	14	314.0	444.81	6864
0.9405	0.9332			18	93	3554.30	54,850	7	13	162	7	13	313.5	444.29	6856
0.9396	0.9323	40	47	17	94	3550.87	54,797	7	13	109	7	13	313.0	443.86	6850
0.9391	0.9318				95	3548.99	54,768	7	13	75	7	13	313.0	443.62	6846

TABLE FOR DISTILLED SPIRITS AND ALCOHOL (*continued*).

PART IV.—From 40 to 55 per cent. of Absolute Alcohol.

Specific Gravity. (Pure water at 15$\frac{5}{9}$° C.—60° F. taken as unity.) At 15$\frac{5}{9}$° C.—60° F.	At 25° C.—77° F.	Percentage. By weight.	By volume.	Under proof. (British Excise.)	Of proof spirit. (U. S. Revenue.)	Weight of one gallon, at 15$\frac{5}{9}$° C.—60° F. In Grammes.	In Grains.	Avoirdupois Weig't. lbs	ozs	Grs.	To the nearest ounce. lbs	ozs	Weight of 40 gallons to the nearest half pound, at 15$\frac{5}{9}$° C.—60° F lbs.	Weight of one pint, at 15$\frac{5}{9}$° C.—60° F. In Grms.	In Grs.
0.9381	0.9307		48	16	96	3545.23	54,710	7	13	22	7	13	312.5	443.15	6839
0.9376	0.9302	41				3543.35	54,681	7	12	431	7	13	312.5	442.92	6835
0.9373	0.9300			15	97	3542.19	54,663	7	12	413	7	13	312.5	442.77	6833
0.9362	0.9288		49	14	98	3538.04	54,599	7	12	349	7	13	312.0	442.25	6825
0.9356	0.9280	42				3535.77	54,564	7	12	314	7	13	312.0	441.97	6820
0.9352	0.9276			13	99	3534.28	54,541	7	12	291	7	13	311.5	441.78	6818
0.9343	0.9267		50	12	100	3530.84	54,488	7	12	238	7	13	311.5	441.35	6811
0.9335	0.9259	43			101	3527.86	54,442	7	12	192	7	12	311.0	440.98	6805
0.9329	0.9253			11		3525.59	54,407	7	12	157	7	12	311.0	440.70	6801
0.9323	0.9246		51		102	3523.33	54,372	7	12	122	7	12	310.5	440.42	6796
0.9318	0.9242			10		3521.45	54,343	7	12	93	7	12	310.5	440.18	6793
0.9314	0.9237	44			103	3519.89	54,319	7	12	69	7	12	310.5	439.99	6790
0.9306	0.9230			9		3516.91	54,273	7	12	23	7	12	310.0	439.61	6784
0.9303	0.9226		52		104	3515.75	54,255	7	12	5	7	12	310.0	439.47	6782
0.9292	0.9214	45		8	105	3511.59	54,191	7	11	379	7	12	309.5	438.95	6774
0.9283	0.9205		53	7	106	3508.16	54,138	7	11	326	7	12	309.5	438.52	6767
0.9270	0.9192	46		6	107	3503.30	54,063	7	11	251	7	12	309.0	437.91	6758
0.9262	0.9184		54	5	108	3500.26	54,016	7	11	204	7	11	308.5	437.53	6752
0.9249	0.9171	47		4	109	3495.33	53,940	7	11	128	7	11	308.0	436.92	6742
0.9242	0.9164		55		110	3492.68	53,899	7	11	87	7	11	308.0	436.58	6737
0.9236	0.9158			3		3490.41	53,864	7	11	51	7	11	308.0	436.30	6733
0.9228	0.9150	48			111	3487.43	53,818	7	11	6	7	11	307.5	435.93	6727
0.9221	0.9143		56	2	112	3484.77	53,777	7	10	402	7	11	307.5	435.60	6722
0.9212	0.9134			1	113	3481.34	53,724	7	10	349	7	11	307.0	435.17	6715
0.9206	0.9128	49				3479.07	53,689	7	10	314	7	11	307.0	434.88	6711
0.9200	0.9122		57	Proof over.	114	3476.80	53,654	7	10	279	7	11	306.5	434.60	6707
0.9189	0.9111			1	115	3472.65	53,590	7	10	215	7	10	306.0	434.08	6699
0.9184	0.9106	50				3470.77	53,561	7	10	186	7	10	306.0	433.85	6695
0.9178	0.9100		58	2	116	3468.51	53,526	7	10	151	7	10	306.0	433.56	6691
0.9168	0.9090				117	3464.75	53,468	7	10	93	7	10	305.5	433.09	6684
0.9160	0.9081	51	59	3	118	3461.70	53,421	7	10	46	7	10	305.0	432.71	6678
0.9150	0.9071			4	119	3457.94	53,363	7	9	425	7	10	305.0	432.24	6670
0.9135	0.9056	52	60	5	120	3452.24	53,275	7	9	338	7	10	304.5	431.53	6659
0.9124	0.9045			6	121	3448.09	53,211	7	9	273	7	10	304.0	431.01	6651
0.9113	0.9034	53	61	7	122	3443.95	53,147	7	9	210	7	9	303.5	430.49	6643
0.9100	0.9021			8	123	3439.02	53,071	7	9	133	7	9	303.0	429.88	6634
0.9090	0.9011	54	62	9	124	3435.26	53,013	7	9	76	7	9	303.0	429.41	6627
0.9075	0.8995			10	125	3429.56	52,925	7	8	425	7	9	302.5	428.69	6616
0.9069	0.8989	55	63		126	3427.29	52,890	7	8	390	7	9	302.0	428.41	6611

TABLE FOR DISTILLED SPIRITS AND ALCOHOL (*continued*).

PART V.—From 55 to 70 per cent. of Absolute Alcohol.

Specific Gravity. (Pure water at $15\frac{5}{9}$° C.—60° F. taken as unity.) At $15\frac{5}{9}$° C.—60° F.	At 25° C.—77° F.	Percentage. By weight.	By volume.	Over proof. (British Excise.)	Of proof spirit. (U.S. Revenue.)	Weight of one gallon, at $15\frac{5}{9}$° C.—60° F. In Grammes.	In Grains.	Avoirdupois Weig't. lbs	ozs	Grs.	To the nearest ounce. lbs	ozs	Weight of 40 gallons to the nearest half pound, at $15\frac{5}{9}$° C.—60° F. lbs.	Weight of one pint, at $15\frac{5}{9}$° C.—60° F. In Grms.	In Grs.
0.9062	0.8982			11	127	3424.70	52,850	7	8	350	7	9	302.0	428.09	6606
0.9047	0.8969	56	64	12	128	3419.00	52,762	7	8	262	7	9	301.5	427.37	6595
0.9036	0.8958			13		3414.85	52,698	7	8	198	7	8	301.0	426.86	6587
0.9025	0.8947	57	65		129	3410.70	52,634	7	8	134	7	8	301.0	426.34	6579
0.9021	0.8943			14	130	3409.15	52,610	7	8	110	7	8	300.5	426.14	6576
0.9008	0.8930			15	131	3404.29	52,535	7	8	35	7	8	300.0	425.54	6567
0.9001	0.8923	58	66		132	3401.63	52,494	7	7	432	7	8	300.0	425.20	6562
0.8994	0.8916			16	133	3398.98	52,453	7	7	390	7	8	299.5	424.87	6557
0.8979	0.8901	59		17		3393.34	52,366	7	7	304	7	8	299.0	424.17	6546
0.8973	0.8895		67		134	3391.07	52,331	7	7	269	7	8	299.0	423.88	6541
0.8966	0.8888			18		3388.41	52,290	7	7	227	7	8	299.0	423.55	6536
0.8956	0.8878	60			135	3384.59	52,231	7	7	169	7	7	298.5	423.07	6529
0.8953	0.8875			19		3383.49	52,214	7	7	151	7	7	298.5	422.94	6527
0.8949	0.8870		68		136	3382.00	52,191	7	7	129	7	7	298.0	422.75	6524
0.8938	0.8859			20	137	3377.79	52,126	7	7	63	7	7	298.0	422.22	6516
0.8932	0.8853	61				3375.52	52,091	7	7	29	7	7	297.5	421.94	6511
0.8925	0.8846		69	21	138	3372.93	52,051	7	6	426	7	7	297.5	421.62	6506
0.8910	0.8831			22	139	3367.22	51,963	7	6	338	7	7	297.0	420.90	6495
0.8908	0.8829	62				3366.45	51,951	7	6	326	7	7	297.0	420.81	6494
0.8900	0.8821		70		140	3363.47	51,905	7	6	280	7	7	296.5	420.43	6488
0.8897	0.8818			23		3362.30	51,887	7	6	262	7	7	296.5	420.29	6486
0.8886	0.8807	63			141	3358.15	51,823	7	6	198	7	6	296.0	419.77	6478
0.8883	0.8804			24		3357.05	51,806	7	6	181	7	6	296.0	419.63	6476
0.8875	0.8796		71		142	3354.00	51,759	7	6	134	7	6	296.0	419.25	6470
0.8869	0.8790			25		3351.74	51,724	7	6	99	7	6	295.5	418.97	6465
0.8863	0.8784	64			143	3349.47	51,689	7	6	64	7	6	295.5	418.68	6461
0.8854	0.8775			26		3346.10	51,637	7	6	12	7	6	295.0	418.26	6455
0.8850	0.8771		72		144	3344.54	51,613	7	5	426	7	6	295.0	418.07	6452
0.8840	0.8761	65		27	145	3340.78	51,555	7	5	368	7	6	294.5	417.60	6444
0.8825	0.8746		73	28	146	3335.08	51,467	7	5	279	7	6	294.0	416.88	6433
0.8816	0.8736	66				3331.71	51,415	7	5	228	7	6	294.0	416.46	6427
0.8811	0.8731			29	147	3329.83	51,386	7	5	198	7	5	293.5	416.23	6423
0.8799	0.8719		74	30	148	3325.30	51,316	7	5	129	7	5	293.0	415.66	6414
0.8793	0.8713	67			149	3323.03	51,281	7	5	94	7	5	293.0	415.38	6410
0.8783	0.8703			31		3319.21	51,222	7	5	34	7	5	292.5	414.90	6403
0.8769	0.8689	68	75	32	150	3313.96	51,141	7	4	391	7	5	292.0	414.25	6393
0.8754	0.8674			33	151	3308.25	51,053	7	4	303	7	5	291.5	413.53	6382
0.8745	0.8665	69	76		152	3304.89	51,001	7	4	251	7	5	291.5	413.11	6375
0.8739	0.8659			34	153	3302.62	50,966	7	4	216	7	4	291.0	412.83	6371
0.8721	0.8641	70	77	35	154	3295.81	50,861	7	4	111	7	4	290.5	411.98	6358

TABLE FOR DISTILLED SPIRITS AND ALCOHOL (*continued*).

PART VI.—From 70 to 85 per cent. of Absolute Alcohol.

Specific Gravity. (Pure water at 15⅝° C.—60° F. taken as unity.)		Percentage.				Weight of one gallon, at 15⅝° C.—60° F.							Weight of 40 gallons to the nearest half pound, at 15⅝° C.—60° F.	Weight of one pint at 15⅝° C.—60° F.	
								Avoirdupois Weig't.							
											To the nearest ounce.				
At 15⅝° C.—60° F.	At 25° C.—77° F.	By weight.	By volume.	Over proof. (British Excise.)	Of proof spirit. (U.S. Revenue.)	In Grammes.	In Grains.	lbs	ozs	Grs.	lbs	ozs	lbs.	In Grms.	In Grs.
0.8708	0.8628			36	155	3290.89	50,785	7	4	35	7	4	290.0	411.36	6348
0.8696	0.8616	71	78	37		3286.35	50,715	7	3	403	7	4	290.0	410.79	6339
0.8693	0.8613				156	3285.25	50,698	7	3	385	7	4	289.5	410.66	6337
0.8678	0.8598			38	157	3279.55	50,610	7	3	297	7	4	289.0	409.94	6326
0.8672	0.8591	72			158	3277.28	50,575	7	3	263	7	4	289.0	409.66	6322
0.8664	0.8583		79	39		3274.23	50,528	7	3	216	7	3	288.5	409.28	6316
0.8649	0.8568	73			159	3268.59	50,441	7	3	129	7	3	288.0	408.57	6305
0.8646	0.8565			40		3267.43	50,423	7	3	110	7	3	288.0	408.43	6303
0.8639	0.8558		80		160	3264.84	50,383	7	3	71	7	3	288.0	408.10	6298
0.8631	0.8550			41		3261.79	50,336	7	3	23	7	3	287.5	407.72	6292
0.8625	0.8544	74				3259.53	50,301	7	2	426	7	3	287.5	407.44	6288
0.8615	0.8534			42	161	3255.77	50,243	7	2	368	7	3	287.0	406.97	6280
0.8611	0.8530		81		162	3254.21	50,219	7	2	344	7	3	287.0	406.78	6277
0.8603	0.8522	75			163	3251.23	50,173	7	2	298	7	3	286.5	406.40	6272
0.8599	0.8518			43		3249.68	50,149	7	2	274	7	3	286.5	406.21	6269
0.8581	0.8500	76	82	44	164	3242.87	50,044	7	2	169	7	2	286.0	405.36	6255
0.8566	0.8485			45	165	3237.23	49,957	7	2	82	7	2	285.5	404.65	6245
0.8557	0.8476	77	83			3233.80	49,904	7	2	29	7	2	285.0	404.22	6238
0.8550	0.8469			46	166	3231.21	49,864	7	1	426	7	2	285.0	403.90	6233
0.8539	0.8458				167	3227.00	49,799	7	1	361	7	2	284.5	403.38	6225
0.8533	0.8452	78		47		3224.73	49,764	7	1	327	7	2	284.5	403.09	6220
0.8526	0.8444		84		168	3222.14	49,724	7	1	287	7	2	284.0	402.77	6215
0.8516	0.8434			48		3218.31	49,665	7	1	227	7	2	284.0	402.29	6208
0.8508	0.8426	79			169	3215.33	49,619	7	1	182	7	1	283.5	401.92	6202
0.8501	0.8419			49	170	3212.67	49,578	7	1	140	7	1	283.5	401.58	6197
0.8496	0.8414		85			3210.79	49,549	7	1	112	7	1	283.0	401.35	6194
0.8483	0.8401	80		50	171	3205.87	49,473	7	1	36	7	1	282.5	400.73	6184
0.8466	0.8384		86	51	172	3199.46	49,374	7	0	374	7	1	282.0	399.93	6172
0.8459	0.8377	81				3196.80	49,333	7	0	333	7	1	282.0	399.60	6167
0.8450	0.8368			52	173	3193.36	49,280	7	0	280	7	1	281.5	399.17	6160
0.8434	0.8352	82	87	53	174	3187.34	49,187	7	0	187	7	0	281.0	398.42	6148
0.8415	0.8333			54	175	3180.15	49,076	7	0	76	7	0	280.5	397.52	6134
0.8408	0.8326	83	88			3177.49	49,035	7	0	35	7	0	280.0	397.19	6129
0.8396	0.8314			55	176	3172.95	48,965	6	15	402	7	0	280.0	396.62	6121
0.8387	0.8305				177	3169.58	48,913	6	15	350	7	0	279.5	396.20	6114
0.8382	0.8300	84				3167.70	48,884	6	15	322	7	0	279.5	395.96	6110
0.8376	0.8294			56		3165.44	48,849	6	15	286	7	0	279.0	395.68	6106
0.8373	0.8291		89		178	3164.27	48,831	6	15	269	7	0	279.0	395.53	6104

TABLE FOR DISTILLED SPIRITS AND ALCOHOL (*continued*).

PART VII.—From 85 to 100 per cent. of Absolute Alcohol.

Specific Gravity. (Pure water at $15\frac{5}{9}$° C.—60° F. taken as unity.) At $15\frac{5}{9}$° C.—60° F.	At 25° C.—77° F.	Percentage. By weight.	By volume.	Over proof. (British Excise.)	Of proof spirit. (U. S. Revenue.)	Weight of one gallon, at $15\frac{5}{9}$° C.—60° F. In Grammes.	In Grains.	Avoirdupois Weig't. lbs	ozs	Grs.	To the nearest ounce. lbs	ozs	Weight of 40 gallons to the nearest half pound, at $15\frac{5}{9}$° C.—60° F lbs.	Weight of one pint, at $15\frac{5}{9}$° C.—60° F. In Grms.	In Grs.
0.8357	0.8275	85		57	179	3158.24	48,738	6	15	176	6	15	278.5	394.78	6092
0.8340	0.8258		90		180	3151.83	48,639	6	15	77	6	15	278.0	393.98	6080
0.8336	0.8254			58		3150.34	48,616	6	15	53	6	15	278.0	393.79	6077
0.8331	0.8249	86				3148.39	48,586	6	15	24	6	15	277.5	393.55	6073
0.8317	0.8235			59	181	3143.14	48,505	6	14	380	6	15	277.0	392.89	6063
0.8305	0.8223	87	91		182	3138.61	48,435	6	14	310	6	15	277.0	392.33	6054
0.8298	0.8216			60		3135.95	48,394	6	14	269	6	15	276.5	391.99	6049
0.8288	0.8206				183	3132.19	48,336	6	14	211	6	14	276.0	391.52	6042
0.8279	0.8197	88		61		3128.76	48,283	6	14	158	6	14	276.0	391.09	6035
0.8272	0.8191		92		184	3126.10	48,242	6	14	117	6	14	275.5	390.76	6030
0.8259	0.8178			62		3121.15	48,166	6	14	41	6	14	275.0	390.14	6021
0.8254	0.8173	89			185	3119.30	48,137	6	14	12	6	14	275.0	389.91	6017
0.8240	0.8159			63		3114.05	48,056	6	13	368	6	14	274.5	389.26	6007
0.8237	0.8156		93		186	3112.88	48,038	6	13	351	6	14	274.5	389.11	6005
0.8228	0.8147	90				3109.51	47,986	6	13	299	6	14	274.0	388.69	5998
0.8221	0.8140			64	187	3106.86	47,945	6	13	257	6	14	274.0	388.36	5993
0.8199	0.8118	91	94	65	188	3098.56	47,817	6	13	130	6	13	273.0	387.32	5977
0.8176	0.8095			66	189	3089.81	47,682	6	12	432	6	13	272.5	386.23	5960
0.8172	0.8091	92				3088.32	47,659	6	12	409	6	13	272.5	386.04	5957
0.8164	0.8083		95		190	3085.28	47,612	6	12	362	6	13	272.0	385.66	5951
0.8156	0.8075			67		3082.30	47,566	6	12	316	6	13	272.0	385.29	5946
0.8145	0.8064	93				3078.15	47,502	6	12	252	6	13	271.5	384.77	5938
0.8139	0.8058				191	3075.88	47,467	6	12	217	6	12	271.0	384.48	5933
0.8134	0.8053			68		3073.94	47,437	6	12	187	6	12	271.0	384.24	5930
0.8125	0.8044		96			3070.57	47,385	6	12	135	6	12	271.0	383.82	5923
0.8118	0.8037	94			192	3067.91	47,344	6	12	94	6	12	270.5	383.49	5918
0.8112	0.8031			69		3065.64	47,309	6	12	59	6	12	270.5	383.20	5914
0.8098	0.8017				193	3060.39	47,228	6	11	415	6	12	270.0	382.55	5903
0.8090	0.8009			70		3057.35	47,181	6	11	368	6	12	269.5	382.17	5898
0.8089	0.8008	95				3056.96	47,175	6	11	363	6	12	269.5	382.12	5897
0.8084	0.8003		97		194	3055.08	47,146	6	11	334	6	12	269.5	381.88	5893
0.8061	0.7980	96			195	3046.33	47,011	6	11	200	6	11	268.5	380.79	5876
0.8041	0.7960		98		196	3038.82	46,895	6	11	83	6	11	268.0	379.85	5862
0.8031	0.7950	97				3035.06	46,837	6	11	25	6	11	267.5	379.38	5855
0.8014	0.7933				197	3028.64	46,738	6	10	363	6	11	267.0	378.58	5842
0.8001	0.7920	98				3023.72	46,662	6	10	287	6	11	266.5	377.96	5833
0.7995	0.7914		99			3021.45	46,627	6	10	252	6	11	266.5	377.68	5828
0.7992	0.7911				198	3020.28	46,609	6	10	234	6	11	266.5	377.53	5826
0.7969	0.7888	99			199	3011.59	46,475	6	10	100	6	10	265.5	376.45	5809
0.7946	0.7865		100		200	3002.92	46,341	6	9	404	6	10	265.0	375.37	5793
7938	0.7858	100				2999.87	46,294	6	9	357	6	10	264.5	374.98	5787

ON GRADUATED MEASURES.

BY W. H. PILE, M.D.

QUERY 26.—Can any improvement be suggested in Graduated Measures by which greater uniformity can be attained?

IN answer to this query, submitted to me, I regret being unable to report or suggest any improvement in the method of graduating measures, although I have given considerable attention to the subject; and yet I would not assert, in this age of improvement, that the attainment of this very desirable object is impracticable. I believe, however, that with measures, as well as with weights, no other means to insure accuracy will be found to supersede the careful personal attention of the maker, and while skilful hands and watchful eyes, guarded by scientific knowledge, will doubtless produce a higher standard of excellence, yet a conscientious regard to integrity must ever accompany the work.

The object of this paper is not to detail the methods employed in graduating measures, yet I would briefly state that the labor is twofold, the first step being to mark on the glass with some pigment the precise situation of the divisions of the graduate, and the second the cutting or etching of these lines by the glass engraver. Both of these manipulations require attention and skill, and being generally performed by different individuals, who are anxious to do a so-called good day's work, it is not to be wondered at that the result of the day's labor will usually be found to agree only in disagreeing. I would by no means assert that accurate hand-cut graduates cannot be found; but they are the exception, and not the rule. In view of this uncertainty, I would urge every apothecary to settle that question for himself by actual trial, and in this, as in every other doubtful measure, follow the good old advice, Prove all things, and hold fast only to those that are good.

As this trial is so readily made, it should never be omitted. It is simply weighing into the empty graduate, previously balanced, the proper amount of pure water, corresponding to

the divisions of the graduate. Thus, the fluidrachm, if correct, should contain 57 grains of water by weight; the half-ounce, 228 grains; the ounce, 456 grains; the four ounces, 1823 grains; the pint, 7291 grains, &c. If this examination was generally instituted and proper representation made of the result, it might possibly be the means of bringing into the market a better class of measures than those usually met with. It might be proper here to notice those graduates made in moulds, and therefore not depending for accuracy on the especial care of the workmen. Although these are a patented article, yet as they are used to a considerable extent by druggists, I have thought that a careful examination of them might be desirable and useful.

In 1861, William Hodgson, Jr., a druggist of Philadelphia, led by the difficulties already mentioned, endeavored to secure uniformity in graduated measures by having them thus made, concluding that being necessarily fac similes of each other, one being proved correct, all the others would be so likewise. The pressed glass, however, does not present such a brilliant and even surface, nor possess such a transparent body as blown glass usually does, although this defect may be overcome to a great degree by skilful workmen. There are several difficulties which suggest themselves as tending to irregularity in the capacity of measures thus made, such as the varying contraction of different qualities of glass and the expansion of the moulds themselves during the process of manufacture. A possible source of error might exist in neglecting to force the plunger (which determines the capacity of the measure), down to the bottom of the mould. This source of error, it might be remarked, does not exist in those pressed graduates, which are marked or graduated on the inside. The only remaining serious difficulty to be guarded against is in the loss of shape occasioned by withdrawing the glass from the mould while too hot, contraction taking place, generally on opposite sides; the measure becomes slightly oval, and thus its capacity is lessened, and with it its accuracy.

Having pointed out these difficulties, I must candidly acknowledge that a careful examination of many of these

pressed graduates show but a very trifling variation among themselves, and I have no hesitation in saying that if the moulds were made accurately throughout, the measures would be all that could be desired, at least in regard to uniformity and accuracy.

As an appendix to what I have stated, and as tending to verify my remarks in reference to pressed graduates, I subjoin the following results:

	A. 1 oz.	B. 1 oz.	A. 2 oz.	B. 2 oz.	A. 4 oz.	B. 4 oz.	A. 8 oz.	B. 8 oz.	A. 16 oz.	B. 16 oz.
1 fluidrachm, . . .	0	0	+¼	0		+¼				
2 " . . .	0	0	+¼	+¼	0	+¼		+¼		
4 " . . .	0	+¼	+¼	+⅓	0	0	—½	+¼	0	+½
8 " . . .	0	0	+¼	+¼	0	+⅓	—½	+½	0	—½
2 fluid ounces, . . .			0	0	+½	+⅓	—1	0	0	+½
3 " . . .					+⅛	+1	—1¼	0	0	—½
4 " . . .					0	+¾	—½	+¼	0	0
6 " . . .							—1	0	0	½
8 " . . .							—½	+1	—½	—1
12 " . . .									0	—1½
16 " . . .									0	—1

A. Graduates of William Hodgson, patented 1861.

B Graduates of I. H. Hobbs, patented 1872.

The figures indicate the amount of error in drachms: + showing the excess, and — the deficiency of the measures in capacity.

ON POISONS.

BY CHARLES L. EBERLE.

QUERY 31.—An essay on what are Poisons in Pharmacy, and what plan is most efficient in guarding them from improper use *in the shop.*

A POISON is defined to be any substance which, when administered in small quantities, is capable of acting deleteriously on the body. In general language, however, the term is applied only to those substances which destroy life in small doses. In medical jurisprudence it is found very difficult to lay down the exact boundary between medicine and poisons. In legal medicine a writer defines it thus: "A poison is a

substance which, when taken internally, is capable of destroying life without acting mechanically on the system." The law, however, never regards the manner in which the substance administered acts.

If it be capable of destroying life or injuring the health of an individual, it is of little consequence so far as the responsibility of a poisoner is concerned, whether the action on the body be of a mechanical or chemical nature. The statute on poisons embraces all kinds of substances, whether they be popularly or professionally regarded as poisons or not. It specifies that "whoever shall administer, or cause to be taken by any person any poison, or other destructive thing, with intent to commit murder, shall be guilty of felony."

Pharmacy is defined to be "the art or practice of preparing, preserving, and compounding substances for the purpose of medicine." The first clause of the query may, therefore, be thus answered: Poisons in pharmacy are all substances which, being required for use as medicines, are capable of acting deleteriously on the body, or endangering and destroying life when administered in small doses.

Experience has proven that when pharmacies are as they are now quite generally required to be by legal enactment, under the charge of those whose experience and education qualify them for the important post of preparers and dispensers of medicines, but little danger is to be apprehended from liability to the improper use of poisons in the laboratory. Yet human fallibility should be assisted by such measures as may occur to those persons in whose care poisons are intrusted, tending to the prevention of their improper use, and such discussion and elucidation of the subject as may disseminate a knowledge of the expedients adopted.

In the arrangement of a dispensing pharmacy, no plan for the better guarding against errors likely to occur from the improper use of poisons has yet been presented, than a case or receptacle closed by a door, in some instances kept locked, and the key intrusted to a particular individual. This should be convenient to the laboratory, and of a size sufficient to contain the full stock of alkaloids, narcotic extracts,

and such other preparations as are usually denominated poisons.

Each receptacle should have, beside its appropriate label, one on which the maximum and minimum dose of the contents is written. The morphia salts being in constant use may appropriately occupy a separate shelf, and it would be well to classify the remaining substances according to their administrative doses, and distribute their position accordingly. In dispensing, the vials are to be at once replaced after using.

The query may also be supposed to refer still further to a number of preparations usually kept in stock in larger quantities, and which would be harmful if accidentally administered in lieu of milder ones,—the narcotic tinctures, for example. Such should be distinguished by definite arrangement, and the placing of them in parts of the store where the solids are kept.

Other writers have made various suggestions pointing to similar ends. I know of no better one in practice.

The true solution of the difficulty lies in a few words. Let the dispenser educate himself to and practice a cool deportment, and let each detail in his manipulations be governed by close thought and scrupulous care.

IMPROVEMENTS TO BE HOPED FOR IN THE NEXT REVISION OF OUR PHARMACOPŒIA.

BY PROFESSOR OSCAR OLDBERG,

Of the National College of Pharmacy.

WEIGHTS AND MEASURES.

"The plan of decimal gradation in weights and measures is the only rational one, because it is in accordance with the universally adopted decimal notation. If thoroughly carried out, the facilities it would afford in every department of life are scarcely calculable. For one thing, it is not too much to

say, that one-half the time now spent in Great Britain in learning arithmetic might be saved. That study might, in addition, be made an effective means of mental discipline; whereas, at present, the time must be spent in acquiring something like a ready but blind application of complicated rules. The most striking instance, perhaps, of the inconvenience of the *arbitrary mode of division* is furnished by the thermometer. In this case, nature has fixed the fundamental measure, and made it the same for all nations; the interval, namely, between the freezing and boiling-points of water. And yet, in England, this space is divided into 180 parts (F.) or degrees; in Germany, and the Continent generally, into 80° (R.); (and only in France and Sweden) has it been divided into 100°. Thus the basis of uniformity made to our hand has been thrown away, and every observation of temperature made in one country has to be painfully translated before it can be understood in another."

The earnest endeavors put forth of late years by scientists, and especially by political economists of the highest distinction, to effect a harmonious international system of weights, measures, and coinage, and the general favor with which the metric system is received by the leading minds of the commercial, no less than the scientific world, justify the prediction that the units of this system will eventually become the standard units of computation for purposes of international exchange and scientific intercommunication the world over. The changes required in order to establish simple numerical relations of the units of our weights, measures, and coinage to metric units are slight, and various propositions have therefore been made to so modify our present systems as to bring about a certain harmony between them and the metric system, on the ground that such action would be a step towards international correlation, inasmuch as all future systems that may be adopted will undoubtedly be established upon a metric basis, and all systems bearing a simple relation to the same given standard must inevitably bear simple relations each to the other.

At a late meeting of the American Association for the Ad-

vancement of Science, held in Portland, Maine, some very ingenious suggestions for the adaptation of our system of apothecaries' weights to the metric system, were made by Mr. E. B. Elliott, of the Statistical Bureau at Washington, a gentleman whose experience and labors in matters of this nature entitle his opinions to great respect.

According to the best trials yet made, the gramme is equal to 15.432349 troy grains. Mr. Elliott draws our attention to the fact, that, by introducing a new grain, fifteen of which shall weigh *exactly* one gramme, we have at once established the more simple numerical relation of 15 to 1 between these two units without the interminable fraction, while the difference between the new grain and the troy grain would be so small as practically to be scarcely appreciable. The best system based upon this plan is deemed to be the following:

1000 semi-grains = 1 ounce; 30 ounces = 1 kilogram. The semi-grain is equal to $\frac{1}{30}$ of a gramme.

The term semi-grain, not having been heretofore used, would render the liability to confusion less than if the proposed *new grain* were adopted, and at the same time affords us an opportunity to subdivide the ounce into thousandths, while the difference between two semi-grains and one troy grain would still be only about 0.0288 +. This system, however, would necessitate a change also in the value of the ounce, which must contain 514.4 + troy grains (500 new grains, or 1000 semi-grains) instead of 480.

But it is incontestable that the changes above alluded to would bring our weights into a very close relationship with the metric system, for our 30 semi-grain weight would be exactly equal to the gramme, 3 semi-grains to a decigramme, $\frac{3}{10}$ of a semi-grain to a centigramme, &c.; and the arithmetical operations necessary to convert semi-grains into decigrammes, and *vice versâ*, would be only a division or multiplication by 3.

A singular coincidence herewith is the well-known fact that our gold coins weigh (within $\frac{3}{1000}$):

	Tergrammes (or thirds of a gramme).	Semi-grains.
The Double Eagle,	100	1000
The Eagle,	50	500
The Half Eagle,	25	250
The Three-dollar piece,	15	150
The Quarter Eagle,	12.5	125
The One-dollar piece,	5	50

Our silver coins weigh exactly:

	Grammes.	Semi-grains.
The Half Dollar,	12.50	375
The Quarter Dollar,	6.25	187½
The Dime,	2.50	75

Consequently, equivalents as to value:

Standard Gold. $\frac{9}{10}$ fine.		Standard Silver. $\frac{9}{10}$ fine.
1 ounce	=	5 hectogrammes.*
1 tergramme	=	1 pentagramme.
2 semi-grains	=	1 gramme.
(1 grain (*new*)	=	1 gramme).

Another interesting fact is that our gold dollar weighs (within $\frac{8}{1000}$) one German "Quent," and that the "Korn" is exactly equal to ½ semi-grain.

But let us retrace our steps.

The most formidable objection to the introduction of the metric system of weights seems to be that old practitioners of medicine cannot be prevailed upon, or even expected, to use new terms or denominations of quantity in their prescriptions. They will continue to write ounces, drachms, scruples, and grains. The question arises here whether this objection is really as formidable as generally supposed to be. From the comparisons drawn above, and still more clearly from the tables of approximate equivalents of metric and troy weights given in the last revision of the United States Pharmacopœia, it will be seen that reductions from terms of one system to those of the other are not at all difficult, if we are willing to acknowledge the truth that one-fortieth part more or less can-

* 5 hectogrammes are equal to the coinage pounds of Germany and several other nations.

not possibly produce any noticeable difference in doses or their effects. How many pharmacists possess a pair of scales sensitive to $\frac{1}{40}$ grain? Indeed, it may be asked, how many druggists are habitually so careful as not to frequently dispense one-fortieth part too much or too little in weighing out small quantities? Let us suppose that a mixture containing 1 grain of strychnia be prescribed, to be divided into 40 (or 41) pills. I cannot, for my part, believe that it would cause any appreciable disturbance in the course of the doctor's treatment if said pill-mass be instead, for convenience's sake, divided into 41 (or 40) pills. If this be true, and if it is so easy to adapt our weights to the metric unit when this insignificant difference of $\frac{1}{40}$ in the ratio of 15 to 1 be ignored, then I do not understand why we may not immediately adopt the metric system of weights entire. Let old physicians continue to write grains and ounces, if they prefer it. It would be throwing a slur upon the intelligence of the average pharmacist to say that he cannot readily convert any number of troy grains into a corresponding number of decigrammes by subtracting one-third.

As for the only really *serious* objection to the adoption of the metric system of weights—the fact that the symbols for the gramme and the grain *may* be too much alike—it is not by any means an insurmountable obstacle. There is no difference of opinion as to the superiority of the metric system. Now, I ask, shall we forever continue to use our grain, instead of the gramme, because, unfortunately, it so happens that both terms begin with the letters *gr?* I think it would be better for us to devise some means whereby this ambiguity may be avoided. I would suggest that the *gramme* be written *in full*, with the accompanying figures given on each side of the word in the following manner:

5 / grammes / *5*.

In using centigrammes, these may be written *5* / cg / *5*.

The objection urged by the committee appointed for the revision of the United States Pharmacopœia, that this change

would involve much labor in said revision, is not worthy of notice, and certainly does not justify the bad faith with which it carried out the instructions of the convention that created it. We take the liberty to remind the reader that a resolution was passed to make some portion of the metric system officinal in the fifth revision of the Pharmacopœia, which resolution has been totally ignored, as well as the instruction to substitute measures of weight for measures of volume. It is to be hoped that our next revision will embrace the introduction of the metric system of weights to the exclusion of all others and of measures of capacity.

SPECIFIC GRAVITY.

Another desirable improvement would be the use of areometers giving directly the specific gravity of liquids without reference to arbitrary or complicated scales of grades and percentage. The strength of liquids should always be determined by their specific gravity. The latter is true also with regard to the solid extracts. It is my earnest conviction that the specific gravity is a far better standard than "the consistency of pill-mass."

THERMOMETERS.

Equally desirable is the introduction of the Centigrade thermometer for reasons patent to us all.

THE PRODUCTS OF THE OFFICINAL PROCESSES OF THE UNITED STATES PHARMACOPŒIA.

I regret exceedingly that my time is so limited as not to permit me to enlarge upon still another important improvement in our Pharmacopœia, which has often attracted my attention as being of great value, but to which I must, under the circumstances, make only a brief allusion. Being present here at the Richmond meeting in the capacity of a delegate, and earnestly desiring to take part in its proceedings, I am unable to do here what I was prevented from doing before my departure from Washington.

I believe that the progress of pharmacy, as a scientific art, would be vastly stimulated and facilitated by stating in our Pharmacopœia, after each officinal process, the result aimed at and supposed to be obtained by such process. I hope that I might be better understood by an illustration of my suggestion. After giving the officinal process of, for instance, syrup of ferrous iodide, a foot-note should be inserted stating not only the physical properties and chemical reactions of the preparation as at present is done, but also the supposed composition of the remedy as obtained by the process given, and the quantity of the active ingredient therein contained upon which the dose is based; that is, in this case, the quantity of ferrous iodide that the syrup *should* contain. It is well known how difficult it is to obtain uniform results from some of our officinal formulas, and it would be well to state explicitly in all cases *what* the preparation should be. This would doubtless lead to the elaboration of many new and improved processes, and aid us in obtaining better and more uniform products.

RICHMOND, VA., September 18th, 1873.

AN ESSAY, SUGGESTIVE AND CRITICAL, ON LABELLING SHOP FURNITURE, STOCK-BOTTLES AND VIALS,

WITH A VIEW TO PERMANENCE, REGULARITY, AND SAFETY;

ALSO A LABEL CASE TO FACILITATE THE FINDING OF SAME.

BY GEORGE H. SCHAFER.

AT the time Professor Procter tendered us the above we thought we would certainly have time in one year to give a full reply to every branch of the above subject. In fact we contemplated getting up a model label case for exhibition at Richmond, to contain a complete set of all classes of druggists' labels in the most accessible trays.

One year later, however, we can truly say we *have not had*

the time during the past year when we could give the subject proper attention, without neglecting the pressing duties of a growing business. Prof. Diehl's first dun impelled us to engage a skilful workman to build the model. Then time for essays became more costly than ever. Query No. 28, posted on our desk, seemed to stare at us like a self-imposed bill about to go to protest. Dun No. 2 startles us with the knowledge that the design for model is still unfinished. The following notes, at the eleventh hour, will we trust secure a partial redemption from our shortcomings, when you reflect that pharmacists as a class are usually too busy to write.

LABELLING SHOP FURNITURE.

Uniformity and neatness of labels and ware are the chief attributes to a handsome drug store.

The use of different styles of labels on permanent shop ware advertises a lack of order in other particulars. And if "order is heaven's first law," we think the craft on which we sail certainly requires the heaviest cargo of that virtue on mother earth.

We will in all our reference speak in detail only of the kind we found by comparison to answer the best purpose.

For drawers, we have had the opportunity to compare two dozen different styles of pulls with lettering: Iron pulls, with glass labels; porcelain knobs, with abbreviated names, &c, &c. We were unsatisfied with all of these for obvious reasons: that of lettering being precarious on surface; homely appearance and unsafety of abbreviations. The glass labels in the iron pull thus far gave best satisfaction, but they are indistinct in their recess, and yet liable to be broken, besides being expensive.

We lost no time in sending for samples of any new design, but their difference was generally in the painting; being thus unsatisfied in our investigation of modern labels for drawers, we took a retrospective view of the drawer-label business.

Paper labels, however bronzed, being of course out of the question, we concluded that the old practice of painting each label permanently on the drawer was a good one.

Then why not *improve the old way?* If printing fails to meet this want, perhaps painting will fill the bill. We accordingly had our home artist (a *genius*, by the way) take one of our drawers, pumice it down, and put on three flattings or coats of genuine French zinc with turpentine, the fourth coat with zinc ground in damar varnish; on this the sizing of design for scroll was placed by means of a pasteboard pattern; when nearly dry it was covered with pure XX deep gold leaf; the superfluous gold being then brushed off displayed a brilliant scroll groundwork for lettering.

Gold leaf may be considered by some as delicate and expensive, which it is by itself, but when used as above it affords the most substantial base, with the least comparative expense. (Gold is gold, but it goes the farthest.)

The artist then lettered the gold scroll with fine jet-black oil paint with a block letter, size $\frac{3}{4}$ inch high, $\frac{1}{2}$ inch wide, and then appropriately shaded the border and ends of scroll in true artistic style, all uniform throughout, few if any abbreviations. The drawer being thus far finished, is covered with a light coating of best damar varnish; this protects the entire surface, which can be washed with cold water as easily as glass. Being well satisfied, we had our entire set of drawers, 308 in number, painted as above described, for one hundred dollars, not quite thirty-five cents per drawer, being as cheap as the best pull and glass label, with the advantages of a more permanent and plainer label, both as regards safety from destruction or possible mistakes. Gold leaf labels will also make a brilliant appearance on a walnut base, at probably less expense.

We would here advise against the abbreviation of names in labels as much as possible, especially the substantive word, as the practice even here, to say nothing of physicians' prescriptions, is liable to cause errors, and to mystify apprentices with double versions, whereas a fully declined Latin label contains much intelligence in the termination.

As the proper classification or location of articles in a well-regulated pharmacy is a very essential part towards distinguishing or *labelling* their whereabouts, we make the follow-

ing suggestions, presuming your drawers to extend on each side, and the rear end of the store, with shelving for bottles on top: First arrange alphabetically, by careful revision, a list of Latin names of all your officinal or staple drugs suitable to be kept in drawers. Then commence labelling on the side leading to the right from top to bottom drawer, proceeding in the order of your alphabetical list until it is exhausted, when you can label the remaining drawers in such order as will be most expedient for druggists' sundries, &c., &c.

For shop bottles we advise the use of the glass labels throughout; we prefer the pattern that will best admit of two rows of lettering, selecting the color of lettering and ground for label that will harmonize with the furniture.

Commence on the side leading to the right with salt-mouths, pints for top shelf, quarts for middle shelf, and half gallons for the base shelf. Label the half-gallon size with articles most in demand, and the pints with those least in demand, then arrange alphabetically to the right. Proceed in same order with your liquid bottles; a proper classification of tinctures, spirits, &c., will follow, as all the liquid acids will be found adjoining the salt-mouths, and if stock is extensive, the classes may comprise a full division or divisions, thus following in successive division or divisions in regular order with waters, liniments, liquors, mixtures, miscellaneous fluids, spirits, syrups, tinctures, and wines, each class and bottle of a class being placed in their alphabetical order.

Adjoining the above general class of liquids, we would place the fluid extracts in glass-stoppered pint bottles with the adopted glass labels; they can be placed in one or two divisions of shelving ten inches apart, thus leaving room on base shelf for cerate and ointment jars, which with glass labels can always be kept clean without injuring the label. As this will presumably fill space on the officinal side, we will next take the rear shelving, and locate the essentials oils in the first division of three upper shelving with four-ounce ground-stoppered bottles for top shelf, eight-ounce for middle shelf, and pints for lowest shelf; appropriate sizes of glass labels as

adopted will again prove their superiority as being the only label yet produced that is absolutely oilproof.

In the next or remaining division place the shelving the same distance apart, and use four ounces to eight ounces and sixteen ounces of salt-mouths alphabetically glass-labelled for chemicals.

Underneath both divisions on base shelf place terraced shelving of say five steps; this will afford plenty of space for the proper arrangement for one or two ounce salt-mouths for fine chemicals, concentrations, alkaloids, resinoids, &c., all of which arranged on a terrace will make a very brilliant and orderly appearance, especially if glass labels are used; the five terraced shelves occupying a space of only twelve feet long, eighteen inches high, and fifteen inches wide at base, will hold 300 ground-stoppered salt-mouths for the proper protection of the many rarities for which there is generally no permanent place.

As the prescription case is usually on the rear counter, this will be convenient for dispensing, and avoid the necessity of duplicates in the case.

Our remaining class, that of solid extracts, we would rather have *remain* out altogether; in fact, we have placed them in the nearest supply-room in their original jars. We can only throw out the following suggestions to parties who must needs keep them in their front room: 1st. Never open an extract jar until you have to use it, if you fear uncleanliness. Then protect the common strip label for the necessity of many washings by varnishing it with some transparent varnish, and place the jars in the most secluded alcove in your store.

For poison bottles we recommend the rough blue bottle, exhibited last year at Cleveland by Messrs. Whitall, Tatum & Co., and a label on same, giving name of poison with the antidotes.

The above collection of ideas scarcely involve any *new* principles; we have therefore only committed to writing the form or ideal of our own taste, which is,

"Not made to rule, but to subserve where wisdom bears command."

As already intimated, the label case is yet undefined; if during the coming year we meet with better success in that direction, we will give the next meeting of the Association the benefit of our experiments.

With many regrets that we cannot be with you at the session in Richmond, we will hope for that pleasure next year in some Western or Pacific city.

FORT MADISON, IOWA, Sept. 10th, 1873.

ON THE PREPARATION OF AROMATIC POWDER.

BY JOSEPH L. LEMBERGER.

QUERY 87.—Should not Aromatic Powder (U. S. P.) be made by powdering the crude ingredients all together, to facilitate pulverization?

HAVING access only to a clever-sized iron mortar and pestle, and an ordinary drug-mill, with either of which the operation of making aromatic powder, on other than a small scale, is certainly slow and tedious; but from the effort made, I am persuaded, that with a suitable mill, and in all probability best of all, a pair of burr-stones suitably arranged, there would be little difficulty in making aromatic powder more quickly and better, by the plan suggested in the query.

From experiments I have made, I feel persuaded that the plan suggested of powdering the crude ingredients all together, is better than the one now adopted in the officinal formula. I would recommend, however, the following process, which in my judgment is superior to either.

Crush the ginger and separate the fibre with a coarse sieve, then crush the cardamom and separate the capsule from the seeds, and for this purpose, I find a coarsely perforated cullender the best suited, then mix the crushed ginger and cardamom with carefully selected cinnamon bark, and either with an iron mortar and pestle, or drug-mill, reduce to powder that will pass through a moderately fine sieve, then mix with it the nutmeg previously crushed, and pass the whole through

the same process of powdering. Nutmeg being very oily, resists pulverization when manipulated alone, but when mixed with the other ingredients, previously powdered, it acts very kindly. The powders absorb the oil and dry the nutmeg.

PROTECTION OF HYPODERMIC SOLUTIONS FROM CHANGE BY KEEPING.

BY EDWARD H. SQUIBB, OF BROOKLYN.

QUERY No. 45.—Solutions of salts of atropia, strychnia, and other alkaloids for medicinal use, are liable to be spoiled by the growth of microscopic organisms. This is prevented by the addition of solution of carbolic acid.

Query: How small a proportion of carbolic acid will protect such solutions from change?

THE answer to this query as here given, is based almost entirely upon the investigations and observations of the writer's father, Dr. E. R. Squibb.

It is supposed to be established by the investigations of Dr. Bourdon, M. Delpech, M. Gubler, and M. C. Paul, that the growth of confervæ is the only cause of the changes which commonly occur in solutions of the organic alkaloids and their salts; and that these confervæ decompose the alkaloids and consume a portion of their constituents, so that the solutions become weaker as the growths increase. Various methods have been proposed and used to prevent these growths, but thus far none seem more simple or more effectual than the addition of one or other of the phenols; and the crystallized carbolic acid is perhaps the most convenient if not the best of these. This carbolic acid being an irritant in proportion to quantity, and it being very important that solutions for hypodermic use should be as unirritating as possible, it becomes of some consequence to know how little of the protecting agent can be used with average success. The experience of several years in this laboratory, has shown that one volume of a five per cent. solution of crystallized carbolic acid, in sixty-four volumes of a solution of sulphate of atropia of the strength of two grains in each fluid ounce, will generally, but

not always, protect it from change. The carbolic acid here bears the proportion of about one-thirteenth of one per cent., and this proportion proves quite unobjectionable for the delicate purposes of eye surgery. But once or twice in an experience of about six years, it has proved ineffectual for protection.

In the endeavor to answer this query with accuracy, the first result reached was, that accidental circumstances from unknown causes, sometimes prevent the growth of these confervæ in solutions not protected at all; and also admit of their presence in and absence from different bottles of the same solution, without discoverable relation to the proportion of the protecting agency. A series of solutions prepared with care in August, 1872, some unprotected, and others with various proportions of carbolic acid, stood until May, 1873, many of them remaining without growths of any kind, while those which produced confervæ did so without discoverable relation to the protecting agency. Supposing that the atmosphere of a laboratory might be the cause of these confusing results, fresh solutions of acetate of morphia and sulphate of atropia were made, the former salt having proved to be the most easily attacked and the most rapidly changed. The bottles containing these solutions were placed for one week, with stoppers out, in a hospital where such solutions were very liable to change. The solutions were then distributed into small vials, some without protection, and others with various proportions of carbolic acid. These vials were observed every week during the months of May, June, and July, until they ceased to show any farther changes. One vial of the solution of sulphate of atropia which was entirely unprotected, failed, from first to last, to show any signs of change. Two vials of sulphate of atropia solution, and one vial of a pair of acetate of morphia solution, all protected with small quantities of carbolic acid, also failed to show distinct evidence of confervæ. But with these exceptions, the entire number of twelve pairs exhibited a diminution of confervoid growths, in proportion to the quantity of carbolic acid added, until the proportion of carbolic acid reached, in the solution of sulphate of atropia, about one-eighth of one

per cent., and in the solution of acetate of morphia about one-seventh of one per cent., all with larger proportions remaining clear and unchanged. Hence it appears that solutions of some salts, though of the same strength, require more carbolic acid for protection; but the proportion which under ordinary circumstances will protect the most difficult ones of those tried, does not exceed about one-seventh of one per cent.

But these solutions were all made with distilled water, and with more than ordinary care, and were all filtered. When similar solutions were made with ordinary undistilled water, nearly double the quantity of carbolic acid was required to afford a doubtful protection. Hence these solutions should, under all circumstances, be made with distilled water, and be carefully filtered.

The query may then be answered as follows: When such solutions are properly made, the smallest proportion of carbolic acid which will protect them from change, is about one-seventh of one per cent.; but that a proportion of one-sixth of one per cent. is practically better and safer in ordinary practice; and that this latter proportion is unobjectionable in all known respects. To make these solutions with this proportion, the following formulas are suggested. First, to make a five per cent. solution of carbolic acid, which is useful for this and many other purposes:

Take of crystallized carbolic acid 10 parts, or 10 grammes, or 154 grains; distilled water 200 parts, or 200 grammes, or 3086 grains. Weigh the distilled water in a glass-stoppered bottle, capable of holding one-fourth more than the sum of the quantities. Melt the crystallized carbolic acid in the stock-bottle by setting this in water warmed to about 50° C. = 122° F., and weigh the quantity by pouring it carefully into the bottle containing the water, as its sits upon the scale. Then shake the whole together until the carbolic acid is dissolved, and filter the solution through paper. Label it, "Solution of Carbolic Acid, five per cent."

Of this solution, about fifteen minims in each fluid ounce gives a proportion of one-sixth of one per cent.

For solution of sulphate of morphia, of the strength called "Magendie's Solution:"*

Take of sulphate of morphia, solution of carbolic acid, 5 per cent., of each 2 parts, or 2 grammes, or 31 grains; distilled water, a sufficient quantity. Dissolve the sulphate of morphia in about 50 parts, or 50 grammes, or 775 grains, of distilled water; add the solution of carbolic acid, filter through paper, and pass distilled water through the filter, until the filtrate weighs 57 parts, or 57 grammes, or 883 grains. Label, "Solution of Sulphate of Morphia; Magendie's; about 3.51 per cent., or 16 grains in the fluid ounce."

BROOKLYN, August, 1878.

ON THE USE OF PETROLEUM BENZIN FOR EXHAUSTING OLEORESINOUS DRUGS.

BY JOSEPH P. REMINGTON.

QUERY 12.—What merit has petroleum benzin as a solvent for the extraction of oleoresinous drugs, like buchu, chenopodium, &c.?

MANY uses have been discovered for petroleum benzin since it became an article of commerce, and though but recently brought to notice, its applications, from thinning white lead to purifying rare alkaloids, from dissolving india-rubber to removing grease from a silk dress, have secured for this product of mother earth a name and a place not to be despised.

The immense and overgrown development of the petroleum interest has tended to reduce the price of benzin to a very low figure; the common unpurified article is a drug in the market; and although efforts are constantly made to fit it for illuminating purposes, a means of rendering it free from

* The original "Magendie's Solution," as given in "L'Officine de Dorvault," p. 242, is, 1 part acetate of morphia in 40 parts water, or about 16 grains in 640 grains of water. As used in the United States, however, it is made from either acetate, muriate, or sulphate of morphia, and in the proportion of 1 part in about 28½ parts water, or 16 grains in a fluid ounce (of 455 grains) of water.

liability to explode, and cause fearful accidents, is yet to be discovered.

The purified benzin commands a much better price, is put to finer uses, and should alone be used for solvent purposes in pharmacy; the common article is unfit for any purpose in a preparation, for it will be sure, from its offensive odor, to leave its tracks in it.

The first requirement, in answering this query, was believed to be, to secure a good benzin. This was readily done, and an article having the specific gravity of 0.642 was obtained, which on being tested proved to be free from objectionable impurities, and no odor was left on a clean sheet of paper when a small portion was poured on it, and suffered to evaporate.

Eight ounces of finely powdered buchu leaves were taken, and firmly packed in a Squibb's glass percolator, with the siphon arrangement. It was found to be best, however, to substitute the rubber lid for one made of wood, the wooden lid having a groove cut in the under surface to fit the rim of the percolator, and at the bottom of the groove a rubber-band made the joint air-tight.

After allowing the powder to macerate for four days, the siphon was started, and the percolate, very dense and highly charged with extractive matter, came over, at first slowly, and afterwards rapidly; after two pints had passed, the buchu seemed to be exhausted, and so great had been the solvent power of the menstruum, as far as the chlorophyll and other coloring matter was concerned, that the residue looked as if it had been bleached.

The percolate was allowed to evaporate spontaneously, and the amount of oleoresinous extract obtained weighed 305 grains. This, at first sight, was supposed to contain all of the active properties of the drug, and in order to test it, five grains were swallowed in a little water by the writer, producing, however, but little diuresis; the dose was increased to ten grains, which had but moderate effect.

Taking the dose of fluid extract of buchu at a fluidrachm, and granting that one fluid ounce of the extract represents

one troy ounce of the drug, it can readily be seen by a simple calculation, that if the benzin had fully extracted the virtues of the buchu, five grains of the oleoresinous extract obtained would produce the same effect as a fluidrachm of the fluid extract, whilst ten grains would be a large dose.

This fact suggested, that although the buchu had every appearance of being thoroughly exhausted, it might yield some activity to alcohol, and it was then percolated with stronger alcohol, and a dense dark-colored liquid passed over, possessing a bitter taste and considerable odor.

Ten grains of this liquid produced active diuresis, and the writer has no hesitation in asserting that he believes alcohol to be much the better solvent for buchu.

Various other experiments are now under way with other drugs, but sufficient progress has been made to justify the assertion, that the uses of benzin in this direction are circumscribed, the principal objections to its use being inflammability, great volatility, requiring the use of apparatus, not always at the command of all pharmacists; the odor is objectionable generally, and in many cases could not be tolerated by a weak stomach. A continuance of this subject is requested, in order to obtain further information with other plants.

ON THE ALCOHOLIC STRENGTH OF TINCTURE OF COLOMBO.

BY CHARLES L. EBERLE.

QUERY 35.—The present strength of Alcohol directed by the U. S. Pharmacopœia for Tincture of Colombo is improper. What is the best strength of Alcohol to exhaust Colombo for tincture and fluid extracts?

IN arranging a formula for a tincture of Colombo, the framers of the latest revised edition of the U. S. Pharmacopœia either overlooked the necessity for a menstruum which should contain a sufficient amount of alcohol to exert a proper preservative influence over the preparation, or may have been tempted to sacrifice stability to the objection of associating

with a standard tonic an amount of stimulant in excess of that ordinarily adopted as sufficient to accomplish satisfactory resultant preparations.

The formula is unaltered and corresponds with those of former editions, since that of 1840, when the proportion of Colombo to menstruum was increased.

The tincture of Colombo is so frequently associated with aqueous solutions to combine stimulant and tonic power, that the slight increase in alcoholic strength sufficient to render the preparation permanent would not be objectionable, and where it is desirable to prescribe a fluid preparation of the drug alone or with other tincture, or where a stimulant would be improper in excessive amount, the fluid extract offers an available substitute.

In exhausting Colombo for tincture it is only necessary in order to overcome the difficulty heretofore observed, to secure perfect solution and a stable result, that the menstruum should not be below 44 per cent. alcohol or specific gravity 930; a weaker fluid cannot be relied upon.

The present formula for the fluid extract being in my experience entirely satisfactory, I have no suggestion to make with regard to it; in fact I should be averse to its modification.

ON THE INFLUENCE OF HEAT ON PREPARATIONS OF SARSAPARILLA.

BY J. F. JUDGE, CINCINNATI, OHIO.

QUERY 83.—Is Sarsaparilla altered in its sensible properties and injured in its medicinal qualities by the heat of a water or steam-bath?

FOR the purpose of answering this query I prepared a fluid extract by exhausting a good article of sarsaparilla with a mixture of alcohol 92 per cent., five (5) parts, and of water three (3) parts.

One (1) fluid ounce of this was evaporated to a thick pilular extract over a water-bath, yielding sixty-three (63) grains

of extract of a brownish color, and retaining the peculiar taste of the fluid extract.

Upon digesting this extract with two (2) fluid ounces of a menstruum similar to that used originally in making the fluid extract, nearly all was dissolved, there being left but little insoluble matter, hence I conclude that in sensible properties sarsaparilla is NOT injured by the "heat of a water or steam bath."

In regard to the second branch of the query I cannot say much. From the fact that little if any change occurs in sensible properties, we would be inclined to conclude that the medicinal are likewise uninjured. The direct establishment of that point scarcely comes within the practical work of a pharmacist. Then, again, there is much diversity of opinion in regard to the actual medicinal value of the crude drug itself. It is my opinion, based upon the experiments above cited, that sarsaparilla is NOT altered in its sensible properties nor injured in its medicinal qualities by the heat of a water or steam bath.

FLUID EXTRACT OF SARSAPARILLA.

BY J. F. JUDGE, CINCINNATI, OHIO.

QUERY 61.—Fluid Extract of Sarsaparilla, as prepared by the officinal formula, deposits upon standing. Is it not advisable to use less sugar, and allow some of the alcoholic menstruum to be retained by the finished preparation?

THE Pharmacopœia of 1860 provides for percolating the sarsaparilla with *dilute alcohol*, and having expelled 75 per cent. of the alcohol, adds the sugar, 10 troy ounces, for each pint of product, and proceeds to expel what little alcohol remained.

In this product we have an effort made to hold in solution in a watery syrup, the matter extracted by a different menstruum, the result, a "*deposit*" of insoluble matter, is what should have been anticipated.

The Pharmacopœia of 1870, having its "back up" *a la*

Cam (pb) el, on the marvellous virtues of glycerin, must of necessity substitute one sweet principle for another, so we find fluid extract of sarsaparilla is to be made by taking two measures of alcohol, and one measure each of glycerin and water, and having collected a certain quantity of percolate as the result of the solvent properties of this mongrel menstruum, it directs that the percolation be continued with another menstruum, having necessarily somewhat modified solvent powers. It appears to be a matter of little importance in the minds of the able revisers of the Pharmacopœia of 1870, how frequently you change the character of the menstruum, provided you get a little of the magic talisman glycerin in the *finished* preparation.

Entertaining the opinion that alcohol of some strength is generally the best menstruum for preparing fluid extracts, and I may remark that my experience in the manufacture of fluid extracts is sufficiently extended to warrant my having an opinion, I proceeded to prepare a fluid extract of sarsaparilla, by selecting a good article of the drug, ground it to a moderately fine powder, and proceeded to percolate with a menstruum, consisting of alcohol five (5) parts, and water three (3) parts; the powder was divided into four (4) equal parts, and the material exhausted by repercolation.

The fluid extract, a specimen of which is herewith presented, was finished in August, 1872, and having stood for 13 months, still remains clear or free from deposit.

I therefore submit, that it *is* best to retain the alcoholic character of the menstruum, and to *omit* both sugar and glycerin from the finished preparation.

ON FLUID EXTRACT OF VANILLA.

BY E. P. NICHOLS, M.D.

QUERY 62.—Vanilla. How can this substance be best exhausted? Give a formula for the preparation of a satisfactory fluid preparation of it.

IN answering this query it was hardly expected that the natural history of the plant should be given, as that is fully

laid down in the books, and is doubtless familiar to you all; nor that I should discuss the merits of the different species of bean, long and short, thick and thin, shiny and dull in appearance. We do not suppose that the mere length of the bean has any more to do with its flavor or flavoring qualities, than the length or breadth of a man decides his mental or moral qualities. But as position and culture and education all play their part in the formation of character, so soil, climate, and cultivation establish the quality of the fruit under consideration.

My first thought on reading over this query, when presented to me, was one of surprise that it had not been accepted before. The answer seemed so easy. Any one could give a good formula for an extract of vanilla, and each of our several methods of extracting its virtues is of course the best. But perhaps my hasty judgment was an injustice to the members of this sage Association, in allowing the thought that any one of them would undertake a scientific investigation, merely because it would not require much time nor labor.

Without reflection, it occurred to me that I had only to sit down and write out my own formula, and give the process of manipulation. The many difficulties in the way of a satisfactory answer to the question did not then present themselves. I even forgot that tastes differ, and that all do not smell from the same standpoint; that some who use the extract largely, prefer one made entirely from the vanilla bean, while others would select a preparation containing a certain proportion of the Tonka; that the dislike of some persons to vanilla in any form, might lead them to pronounce the best extract inferior; that while one man is positive the long bean makes the best extract, another is of the opinion that the short is equally good; that economy is an essential requisite with some, while others take no note of the cost.

And now after considering the subject two full years, I am no better prepared to give a satisfactory answer than when it was first accepted. I have also ceased to wonder why any one should hesitate to volunteer an answer, when such able minds have placed on record so good a recipe.

You may therefore think it strange for me to assert, that there is no difficulty in the way of making a good extract of vanilla. It is one of the simplest operations in the range of pharmacy. The only requisites are Cologne spirits, water, sugar, *good* beans, and time, especially the last two. I have never yet been able to discover why *brandy* should be employed, except to increase the cost of the preparation ; deodorized spirits and water are quite as good if not better. A mixture of Cologne spirits, water, and glycerin has been tried, but I have not found the addition of glycerin an improvement.

For a simple extract of vanilla, there is probably no better formula than that proposed by Professor Procter, which may be found in a foot-note, under the head of Vanilla, in the U. S. Dispensatory. This will answer most indications, but to suit a different taste, and for those who desire a more economical preparation, I would submit the following as a "good formula for extract of Vanilla" for flavoring purposes, or if you insist on calling things by their right names, a formula for extract of vanilla and Tonka.

Take of Vanilla Beans, ...	4 ounces.
Tonka Beans, ...	8 ounces.
Deodorized Alcohol, proof, . . .	8 pints.
Simple Syrup, ...	32 ounces.

Cut and bruise the beans, macerate for fourteen days in one-half the spirits, with occasional agitation, pour off the clear liquor and set aside, pour the remaining spirits on the magma, and heat by means of a water-bath to about 170° Fahr., in a loosely covered vessel, keeping it at that temperature two or three hours, cool and strain through flannel with slight pressure, mix the two portions of liquid and filter through felt; add the syrup. If a genuine extract of vanilla is desired, take of vanilla beans six ounces, omit the Tonka, and proceed as above. This process so exhausts the beans that percolation is unnecessary. The loss by evaporation is very slight, if a little care is taken in properly covering the vessel, and preventing too high a temperature during the heating process.

This extract is not quite as elegant in appearance as that made by percolation without heat. It could probably be

made perfectly clear without any diminution of its flavoring qualities, but I have made no experiments in this direction.

In making the extract, I should always select the long bean, because, if for no other reason, it has the best reputation.

You will excuse me if, in closing, I volunteer one piece of advice. Never buy *handsome-looking* vanilla beans, when they are offered to you considerably under the market price.

PILULA FERRI CARBONATIS.

BY EDWARD D. CHIPMAN, PHILADELPHIA.

QUERY 15.—Can the proportion of sugar and honey be improved in the officinal process for Pilula Ferri Carbonatis.

TAKING 16 troy ounces of selected sulphate of iron, I pursued carefully the instructions of the United States Pharmacopœia in regard to the solution of the two salts in the syrupy liquid, washing the precipitate until deprived of its saline taste; draining the precipitate, and expressing the water.

At this point I collected the precipitate, which I carefully weighed and divided into four equal parts by weight. I then mixed each portion of the precipitate with clarified honey and sugar in the following proportions:

	Honey.	Sugar.
First,	8 parts.	2 parts.
Second,	2 "	8 "
Third,	2½ "	2½ "
Fourth,	8 "	8 "

Having placed my four capsules in the same water-bath, so as to admit of their evaporation at the same time and temperature, I conducted the evaporation as rapidly as possible to their proper weights. After an exposure of sixty days, part of the time uncovered in the jars, I am led to the following observations.

The dark greenish-gray color of all changed by oxidation to the characteristic black, but while in numbers one and three the oxidation was apparent to one-third their depth,

numbers two and four presented but a thin coating or surface of the same, number two retaining in a marked degree the peculiar greenish-gray hue.

In consistence for a pilular mass it is superior to the officinal proportions, and I believe the reversal of the proportions of honey and sugar in the officinal process would be an improvement upon the same.

ON CUCUMBER OINTMENT.

BY WILLIAM PROCTER, JR.

Reply to Query 24.—Is there no better method of preparing Cucumber Ointment than that now in use by beating the juice with fats?

The formula at present in use indicated in the query was originally published by the writer. It consisted in making a simple ointment of refined veal suet and purified lard, and beating this in a soft state with repeated portions of the strained juice of green cucumbers until by contact the fat had absorbed the odorous matter of the cucumber-juice, the aqueous portion of which is then rejected, the fat separated by a gentle heat, filtered, run into dry bottles with wide mouths and closely sealed.

The faults of the process are: 1st. The necessity of making the ointment in quantity in the cucumber season; 2d. The use of solid fat makes the necessary contact of the aqueous juice and fat more difficult, and involves the use of heat subsequently in separating them; 3d. The difficulty of completely separating the ointment from moisture so as to prevent it from moulding when kept without overheating it.

After some reflection on the difficulties here presented, it was determined to use a pure cold liquid fat as the agent for extracting the odorous matter of the juice, and afterwards to employ this odorized liquid fat to make the ointment as wanted in moderate quantities, it being presumed *à priori*

that the solution would keep unchanged if closely sealed. The following experiments were undertaken in this direction:

Take of—

Cucumbers, well ground but green and fresh,	.	160 troy ounces.
Oil of Sweet Almonds,	. . . . . .	16 " "

Grate the cucumbers, without paring, on a tinned iron grater, express the juice, and strain it through a close cotton cloth. Put half the juice in a gallon bottle, add the oil, cork the bottle, and agitate them together at short intervals during several hours, let the oil rise to the surface, decant the exhausted juice and replace it by the remainder of the juice, again agitate freely and repeatedly, allowing twenty-four hours to elapse before setting it aside to separate. Then decant the exhausted juice and throw it away. (The decantation is most easily effected by fitting another cork, with a tube passing through it nearly to the bottom of the bottle, carefully inverting the bottle, and when the upper layer of oil, which is apt to be slightly emulsed, has separated, loosening the cork until the watery liquid has nearly all passed out.) Finally, separate the oily layer as much as possible from water, and pour it on a carefully prepared plaited filter which, whilst folded, has been dipped in oil of almonds, drained and spread in a suitable funnel, observing to press the folded point a short distance into the neck of the funnel before pouring in the oil. The filtration proceeds regularly, a bright oily filtrate, having a decided odor of cucumbers, is obtained, and generally towards the last a little water, if much of the oily layer was emulsed when poured on the filter. This collects on the bottom and the oil can be nearly all poured off. Sometimes it is necessary to filter the last portion a second time in the same way.

It is of great importance to deprive the oil of all moisture to prevent change in keeping, and it should be perfectly transparent, and may be called *Oleum cucumides*, or oil of cucumber. Ten pounds of cucumbers yield easily a gallon of juice.

Cucumber Ointment.—The French pharmaceutists, who se-

lected veal suet for this ointment, know that it has special merit, fusing at 110° with a uniform bland consistence and if carefully rendered but little odor. To favor a moderate exposure to heat in the rendering of this fat it should be chopped finely, the rendered portion poured off from time to time, and the whole finally united by fusion.

FIRST FORMULA.

Take of—

Cucumber Oil, ...	2 troy ounces.
Prepared Veal Suet, ...	4 " "
White Wax, ...	½ " "

Melt the suet in a porcelain capsule, add the wax previously well divided, and heat gently at a temperature not exceeding 130° F. until the wax is dissolved, then add the cucumber oil and stir constantly until it thickens on cooling, when it should be put in suitable jars for dispensing whilst yet soft and covered with sheet gelatin.

As thus prepared, cucumber ointment is nearly white, has an agreeable odor of cucumbers, and is perfectly smooth and homogeneous in consistence.

SECOND FORMULA.

Take of—

Cucumber Oil, ...	2 troy ounces.
Oil of Almonds, ...	8 " "
Spermaceti, ...	1 " "
White Wax, ...	120 grains.

Dissolve the spermaceti and wax, shaved fine with a knife, in the oil of almonds previously heated to 130° F. with constant stirring, then add the cucumber oil after removal from the fire, and stir constantly until it thickens on cooling, when it should be prepared for dispensing as above, or put in a single jar as desired.

Thus made, the consistence of cucumber ointment differs from that made with suet, being more like rose-water ointment, than which it keeps much better, being free from moisture. If put up in small glass jars these should be kept from the light. Samples of cucumber oil and of the ointment made by each formula are submitted.

ON FLEXIBLE GELATIN PLASTER.

BY HENRY N. RITTENHOUSE.

QUERY 1.—Can a permanently flexible Gelatin Plaster be prepared by some addition to the isinglass used, which will prevent the tendency of the plaster to curl and irritate the skin mechanically?

THE desired object can be attained by the addition of 10 per cent. of glycerin to the isinglass used.

I suggest the following formula.

Take of—

Isinglass, Russian, ...	10 ounces.
Glycerin, concentrated, . . .	1 ounce.
Water, ...	8 pints.

Mix the water and glycerin, and macerate the isinglass in the mixture an hour or two, then boil ten or fifteen minutes, and strain through coarse muslin; spread the mixture in successive layers, on about four square yards of silk, in a suitable frame, allowing each layer to dry before adding the next. When dry, cut from the frame, and divide into suitable-sized pieces, and put up in rolls.

ON SAPO VIRIDIS.

BY P. FREDERICK LEHLBACH.

QUERY 7.—"Sapo viridis" vel "sapo mollis" is sometimes prescribed. What is the easiest plan of making it from olive oil and liquor potassæ?

THE knowledge of soft soap—"sapo mollis"—dates as far back as that of soap generally; it is as ancient as history. Plinius speaks of two kinds of soap, the hard and the soft, as in use among the Gauls and Germans, attributing to the former the discovery of it, while the latter are credited with producing a superior quality. In the manufacturing of soap, that of the soft variety plays a more important part than is generally supposed, and especially in European countries the quantity used is enormous. Soft soap being a potassa soap,

with this alkali in excess, is a more powerful detergent than the hard, and is consequently employed on the continent of Europe in all cases where hard soap is insufficient for cleansing purposes, or is too expensive. But by far its most important use is in those countries where the bleaching of linen and manufacturing of calico are extensively carried on. In those branches it has superseded the use of hard soap, as a cleansing agent, altogether.

Commercial soft soap differs greatly in appearance. This difference is due to the variety of oils or fats employed. Thus, for instance, in France and Germany the oils of different seeds are worked, especially hemp, rape, and flax, while in Scotland and Ireland it is commonly made from fish oil, and sometimes oleic acid. When made from hempseed oil, it is of a beautiful dark-green color, which, by consumers, is looked upon as an indication of superior quality. On account of this color the name of "sapo viridis" is retained in the German Pharmacopœia, although the soap usually dispensed by pharmacists in Germany, if not entirely made from fish oil, contains at least a portion of it, to which the penetrating, propylamin-like odor is due. When "sapo mollis" is made from fatty oils, which do not impart this color to it, it is the custom to produce it by the addition of indigo, which is generally finely powdered and boiled with water, until thoroughly saturated, before it is added. In some parts of Europe it was colored black by tannate of iron, hence the name "sapo niger" in some of the older pharmacopœias. All these remarks have reference to the soft soap made in Europe. That manufactured here is usually made from refuse grease and oils, is of a much softer consistence, very impure, and not being used to any great extent, little attention is paid to its preparation. Although soft soap should be a pure potassa soap, yet the commercial is often a mixture of it and soda soap, the latter being cheaper and able to retain more water, without becoming too soft, thus increasing the bulk and the profit of the dealer.

All commercial soft soaps contain an excess of potassa; or, in other words, are potassa soaps in potassa.

These few remarks about the commercial varieties may be of interest to some, since in dispensing "sapo mollis," "sapo viridis," "sapo niger," "kali oleinicum," or whatever synonym may be used in the physician's prescription, we dispense the article of commerce.

The query calls for an easy formula, enabling the pharmacist to make this preparation without much inconvenience.

This, at the first glance, seems to be an easy problem; but no one who has ever attempted the making of soaps, and has experimented with them to any extent, will deny, that to make a faultless and perfect soap, is an art that requires a long experience and close observation. This is especially true with the soft variety, for various reasons. In the first place, when making hard soap, all impurities are removed when the solution of common salt is added; the salting out of the soap, as it is technically termed, when the pure soap separates. This treatment is, of course, inapplicable to soft soap. The quantity of water, on which the degree of consistence of "sapo mollis" depends, and the proper strength of the potassa solution, which is to keep the soap dissolved, are also of no little importance, and require a number of experiments to determine them. That great ignorance prevails among soapmakers in this particular branch of the business, is shown by the fact that an extensive German drug house in this city, having continually a large demand for "sapo viridis," resolved to have it manufactured here, instead of importing it, but tried in vain to find a soapmaker who could furnish a saleable article.

The query asks for a formula for "sapo mollis" made from olive oil and liquor potassæ; but as the officinal liquor potassæ of 1.065 specific gravity contains little more than 5½ per cent. of potassa, it is impossible to bring about a thorough saponification with it. It would be necessary, therefore, to concentrate the solution by evaporation, which would be merely a loss of time. All experiments were, therefore, made with the dry potassa of the Pharmacopœia.

Formerly the oil or fat to be saponified was first heated with a lye of not more than about 8 per cent. of potassa, and the stronger one added after saponification had partly com-

menced. The method now pursued by experts is to use a lye of uniform strength throughout the process, but commencing the operation with only about the fourth portion of the whole quantity of lye employed. The following working formula for "sapo mollis," from olive oil and potassa, is herewith submitted, by which, if carefully followed, a good result is obtained.

Take of—

Olive Oil, ...	16 troy ounces.
Potassa, ...	6 troy ounces
Water, ...	a sufficient quantity.

Dissolve 5 troy ounces of the potassa in 2 pints of water; add 8 ounces of this solution to the oil in a suitable porcelain vessel and place over a moderate fire. When the mixture has become quite thick, gradually add the remainder of the potassa solution. Continue the heat, occasionally stirring, until the mass has assumed a yellow, transparent gelatinous form. Dissolve the remaining 1 ounce of potassa in 2 pints of water and add it to the mass. Evaporate to a proper consistence. On adding the first 8 ounces of the potassa solution to the oil and applying heat, a white emulsion-like mixture is the result, which in a little while begins to froth, becoming thinner. The heat being continued, it gradually thickens again, saponification having partially commenced, and when it no longer drops from the wooden spatula used for stirring, the addition of the remaining potassa solution is commenced. It is best to use the precaution of warming the solution, for if added cold to the hot mass in the evaporating-dish, this is likely to crack. Eight ounces of the solution are added at a time, always allowing the mass to become quite thick before making an addition. When all of the two pints of the potassa solution has been added, the soap-boiling in reality commences. The process is hastened by raising the temperature slightly, and I have also observed that it is advantageous not to stir continually, only often enough to prevent the mass from scorching at the bottom of the vessel. After applying heat for awhile, yellow, transparent portions will be noticed in different parts of the mass, increasing in dimensions and

number, which finally give a yellow tint to the mass, which at the beginning was cream-like. The heat being continued, the whole will at length be one yellow, transparent gelatinous mass. The oil has all been saponified. This is easily tested by placing a little of the mass in a test-tube and shaking it with sulphuric ether, which, when poured on bibulous paper, will evaporate without leaving an oily stain. It now only remains to add the solution of the 1 ounce of potassa in 2 pints of water. This is for the purpose of dissolving the soap and giving to it the excess of potassa, on which to a great extent the medicinal virtue of "sapo mollis" depends. Before the addition of this, the soap already contains a slight excess of it, as olive oil requires only from 20 to 25 per cent. of potassa for its thorough saponification. The quantity of water in the second or weak potassa solution, may be increased or diminished according to the degree of consistence desired. In winter it will likely be necessary to increase it; the experiments on which this formula is based were all made in August. It may yet be mentioned that it is necessary to use either distilled, rain or a very soft water in order to obtain a good result. The "sapo mollis" thus prepared, generally becomes a little softer on standing a few days, is of a beautiful amber color, perfectly transparent, and is of course decidedly alkaline in reaction and taste. It forms a rich lather with water, which dissolves it readily. Its detergent properties are powerful. When we consider that the soap thus prepared is always of uniform quality and strength, superior to the commercial article, it would seem that in countries where it is extensively used by pharmacists, and has a place in the Pharmacopœia, it would be of greater satisfaction to the conscientious pharmacist to prepare it in his laboratory, than to make use of the soft soap of commerce. If superintended, the apprentice could make this preparation, and would perhaps profit more by ocular observation regarding the interesting chemical phenomenon of saponification, than by days of reading. By some practitioners, in combination with sulphur, it is always employed in itch, as also in a large number of cutaneous diseases. Hebra, in fact the modern school of

German dermatologists, use it very extensively, and its beneficial employment by physicians in this country would doubtlessly become much more frequent if a better, more uniform, more reliable, and more elegant form were accessible than the common commercial soft soap. For if, according to the lamented Liebig, the amount of soap used in a country forms a criterion of the culture and civilization of its inhabitants, the excellency and elegance of the soaps used must certainly be an additional and still finer index.

New York City, August 25th, 1873.

HOMŒOPATHIC PHARMACY.

BY BENJAMIN LILLARD.

Homœopathic pharmacy was first practiced in Leipsic, in the year A. D. 1776, by Samuel Hahnemann, the founder of the homœopathic practice of medicine, who was born in Meissen, in the year 1755. The number of medicines originally consisted of about two hundred, which has been very much increased by the addition of new remedies.

Homœopathic pharmacy of to-day, according to the Universal Homœopathic Pharmacopœia, published in Leipsic last year, in German, English, and French, each page being equally divided between the three languages, comprises some nine hundred and twenty-one medicines, sixty-five of which are of animal, and two hundred and thirty-seven of mineral origin. Among them may be mentioned as well known in our pharmacies, musk, cantharides, aloes, assafœtida, camphor, sulphate of quinia, ipecac, opium, rhubarb, ergot, oil of turpentine, alum, nitrate of silver, arsenious acid, borax, iron, mercury, lead, and sulphur. And among those peculiar to their practice, yet in common use, may be mentioned sepia cuttle-fish ink, burnt sponge, bee poison, lachesis poison of the lance-headed viper, poison oak, metallic copper, coffee, and nitroglycerin.

Homœopathic medicines are prepared in mother tinctures

and triturations; the former are designated by the letter O, with a horizontal line through the centre θ, and are if of vegetable origin, with few exceptions, such as nux vomica, rhubarb, and cinchona, prepared from the fresh living plant, animal, or drug, the proper time and mode of collecting being generally given under each article. The plant or drug is to be "cut up with a well-polished steel knife, free from rust, on a very clean chopping-board, then minced as fine as possible with an equally well-cleaned mincing-knife." Dry drugs are ordered in fine powder. Mother tinctures of succulent plants are made by "expressing in a new piece of linen, the juice mixed with equal parts of alcohol, well shaken, and after keeping in a cool dark place eight days, filtered." Plants only moderately succulent are moistened with two-thirds their weight of alcohol before expression. The others are prepared by macerating in alcohol in the proportions of one to two, and one to five parts alcohol, macerating eight days, shaking twice a day, and filtering.

From the mother tinctures, potencies by the centesimal, and dilutions by the decimal scale are prepared; they are directed to be made in a room protected from the direct rays of the sun. The number of bottles to be used are labelled, and their corks marked with the name and number of the preparation they are to contain, and should be large enough to hold twice the quantity to be made, so as to allow room for shaking. To make the first potency one drop of the mother tincture is put in the bottle marked *1/c*, and ninety-nine drops of alcohol by measure, about 50 grains or 46 minims is added. It is then shaken with ten vigorous jerks of the arm. For the second, marked *2/c*, use one drop of the first, and ninety-nine of alcohol as before. For the third, marked *3/c*, one drop of the second and ninety-nine of alcohol, and so on. They are sometimes carried as high as the thousandth, although the thirtieth is the one generally used. It is natural to suppose, that it would be a tedious process to begin at the first and make the thousandth potency. And it is not strange that the inventive genius of man should have at various times instituted different plans to secure a similar

result by a shorter way. What these modern improvements are we do not know, as they have generally been kept secret. The Pharmacopœia, however, gives no uncertain directions concerning them. "In the face of these plain directions of Hahnemann, which could not have escaped any one who had read and studied the Materia Medica, it is almost incomprehensible that persons should still sell preparations as high potencies, which are made by a secret process, not at all events according to Hahnemann's directions, and thus really in antagonism to them. This nuisance should be really banished from homœopathy, like the proposals of some pharmaceutists, who occupy themselves with the problem of preparing high potencies, under the erroneous notion that there exists no directions."

The dilutions, sometimes called low potencies, are prepared after the same manner, using ten drops of the mother tincture and ninety of alcohol for the first, marked *1/d* or *1/x*. The second, marked *2/d* or *2/x*, is prepared by adding to ten drops of the first, ninety of alcohol, and so on, shaking at every dilution as in the potencies. The third dilution is the one generally used.

The liquid potencies and dilutions are used for medicating globules, which are small pills of pure cane sugar. They are prepared in about ten sizes, the smallest, called number ten, being about one-fourth the size of a millet seed, and gradually increasing to number eighty, the largest, which is about three-tenths of an inch in diameter. The size of a globule is determined by laying ten of them side by side, and the number of millimetres they measure is taken as the number for that particular size. Numbers ten, twenty-five, and sixty are mostly used; number ten almost exclusively for high potencies, and numbers twenty-five and sixty for dilutions. The globules, sometimes called pellets and pills, are medicated, by adding a sufficient quantity of the mother tincture dilution or potency to moisten them thoroughly, care being taken not to add too much. The bottle should not be more than two-thirds full of the globules, and after shaking until they are all uniformly moistened, turn the bottle upside down for

about twelve hours. The cork is then loosened a little to allow any liquid in the neck of the bottle to escape, and in a few days they are dry and ready for use.

Triturations are prepared in a warm and dry atmosphere, by putting one grain of the medicine, and one-third of ninety-nine grains of sugar of milk, in an unglazed china mortar. "The whole is mixed by stirring it for a few moments with a china spatula, and then worked with the pestle with some force for six minutes; afterwards, to mix it well, it is scraped together for four minutes, from the mortar and from the pestle, which is also unglazed. This done, the whole is a second time worked up with equal force for six minutes and scraped afterwards together, as above, for four minutes. Then the second third of ninety-nine grains sugar of milk is added, and the whole subjected exactly to the same manipulations as above; lastly, the remaining thirty-three grains sugar of milk are added, and the whole quantity is once more twice worked with the pestle for six minutes, and twice scraped together for four minutes. This is the first trituration potency. To prepare the second trituration, one grain of the first is added to a third of ninety-nine grains of sugar of milk, and the same process then gone through as with the first trituration; in like manner the third and other triturations are prepared. The triturating must be done with force, yet not so much so that the sugar of milk shall, by adhering too strongly to the mortar, not be removable within the four minutes."*

The decimal triturations are prepared in the same way, only using ten grains of the medicine, and ninety of sugar of milk. The third centesimal and sixth decimal triturations are converted into liquid potencies and dilutions, by dissolving in water, so as to make the fourth centesimal and seventh decimal preparations, which are then made into the fifth centesimal and eighth decimal with alcohol; others are then made in the usual way using only alcohol. The metals and insoluble drugs are generally used in the form of trituration.

* Pharmacopœa Homœopathica Polyglottica, page 34.

The first centesimal preparation is the same as the second decimal, the second centesimal as the fourth decimal, the third centesimal as the sixth decimal, and so on. The centesimal scale was the one originally used by Hahnemann; the decimal having been introduced of late years, and is probably more used than the other at the present time, or at least in this country. The Pharmacopœia directs that where none is mentioned, the centesimal should be used.

"Mortars for powdering hard substances of other metals than iron, well polished, and triturating vessels of any metal are not allowed. Spatulas should be of horn, bone or china. No metal funnels are allowed. Scale pans should be of horn or glass, and not of metal." Minute directions are given for keeping the utensils clean. "New ones must be thoroughly cleansed before using. Bottles and vials are washed twice with rain-water, and rinsed with distilled water, and dried by heat. Corks are washed in a hair sieve with warm water. China vessels are repeatedly scalded in boiling water, and wiped dry each time. The press is washed with cold and afterwards with hot water, and dried. Bottles and vials once used for a medicine are never used for any other." In some pharmacies a separate mortar is kept for each drug to be triturated. Cerates and plasma, though not "officinal," are occasionally employed. There is no established or generally accepted rule for their preparation, the proportions and mode of preparing varying in different localities. Cerates may be made from the dried material in the proportion of one part to ten of a cerate, made of one part white wax, and four of lard. Arsenic, corrosive sublimate, and similar articles are used in the proportion of one to fifty. Those most employed are æsculus, calendula, hamamelis, urtica, and arnica.

Homœopathic medicines should be kept in clean bottles, in a separate department to themselves, well protected from sunlight, dust, smoke, and smells. Those that are apt to be injured by strong light should be in yellow bottles.

Theoretically, the medicines are never mixed, each one being always given by itself, although they often give two alternately every ten or fifteen minutes.

As a general rule the physician prepares and dispenses his own medicine. In the larger cities there are "homœopathic pharmacies," or stores devoted exclusively to homœopathy, as they keep beside medicines, books, cases, instruments, dietetic preparations, and appliances. In cities not large enough for a separate pharmacy, they are generally kept and dispensed at the regular stores. There are now about twenty-two regular homœopathic pharmacies in the United States, situated in the largest cities, four being in New York, three in Chicago, and two in Philadelphia and St. Louis. They are mostly large manufacturing and importing houses, and have a jobbing and wholesale trade, supplying about one thousand regular druggists, who to a greater or less extent deal in them. Physicians generally obtain their supplies from the nearest druggist or dealer. Homœopathic globules and other preparations are quoted on the price lists, and kept for sale by several of our largest jobbers in New York, while homœopathic vials and corks are almost universally kept.

The demand at the pharmacies and stores is to a very large extent from people who have books on domestic practice, and prescribe for themselves. This is, however, quite a large, popular, and increasing business, as the medicines are pleasant to taste, and all the same price, generally ten cents for a drachm vial. The dose of all the medicines is the same. The globules are the most popular, and the dose of the ordinary size, number twenty-five, is eight for an adult. They are always dispensed with the name and strength on a narrow strip label, and stamped on the cork, great care being taken to always keep the same cork in the same bottle. The dispenser should possess, among other requisites, clean hands, and freedom from the flavor of obnoxious vegetables, and tobacco. One of their popular preparations is Rubini's camphor, sometimes called Rubini's tincture; it is prepared by dissolving camphor in an equal weight of alcohol, and is frequently called for in our stores.

Some physicians and druggists object to the sale of homœopathic medicines in our stores, and call it quackery. Yet they have little or no complaint to make about the sale of

botanic medicines, and eclectic preparations, which are universally kept, frequently prescribed and used by them, and many of which have been introduced into our Pharmacopœia. The same may be also said of patent medicines. I do not wish to be considered an advocate of homœopathy, or of any other system or practice of medicine, as I really have little or no confidence in any of them. But as a pharmacist and druggist, I consider it my legitimate business to compound, prepare, and dispense all kinds of medicines, for all kinds of doctors and people, showing no discrimination or partiality for or against any particular kind, on account of their medical, political, or religious opinions. And should a new system of medicine, with a Pharmacopœia entirely different in every respect from anything now in existence spring up to-day, I would consider it my duty to obtain it, and prepare and dispense for them, as soon as I could.

I have been informed that homœopathic pharmacy is exclusively in the hands of regular druggists in Germany and Russia, and to some extent in France, Italy, and Switzerland. Nearly all the druggists in England, and a very large proportion of the best houses in this country sell them.

Whatever we may think about homœopathic pharmacy, we must all admit that in their universal Pharmacopœia, dose, and price of all the medicines, they have attained what we have long talked of, and hoped for, and that by the great care bestowed on the collection and preparation of their medicines, they have established and maintain a high standard for purity, which we could do well to profit by. Such a thing as an adulterated or low grade of any homœopathic medicine has never been heard of. Their pleasant taste, low price, and neat appearance have done much to make them popular with the people, and the handsome profit they pay has had a similar effect on the druggist.

In conclusion, the following extract from the introduction to the Pharmacopœia referred to will be of interest:

"But if it is asked whether the physician, occupied with his professional practice, and often limited pharmaceutical knowledge, should prefer to prepare his own remedies, or ob-

tain them ready for use, prepared with scrupulous accuracy, there could be but one answer. In short, in the course of time, it has been found impossible to dispense with the assistance of professional pharmaceutists."

I would further add, that whatever we may think of homœopathic pharmacy, there is one advantage we must all admit: that should a mistake occur in dispensing, there is no danger of it proving fatal, or of the physician, chemist, or any one else, ever finding it out.

NASHVILLE, 1873.

II. MATERIA MEDICA.

ON THE MEDICINAL AGENTS OF INDIANS.

BY B. F. STACEY, CHARLESTOWN, MASS.

QUERY 25, vol. 18.—What medicinal articles are in popular use among the Indian tribes, and what properties are ascribed to such as are unknown to commentaries?

THIS query was proposed at the annual meeting in 1870 for general acceptance; not having been replied to, it was taken up by the writer this year with the expectation of having a rich field of research. In this he was disappointed; the natural slyness and cunning of the Indian doctors render it very difficult to discover many of their medicines, and from a thorough investigation I am convinced that the list is not lengthy, and that there is but little to be learned from their school of practice or repertoire of medicinal agents. In many tribes more reliance is placed in charms and spells for curing diseases, and even when brought within the influences of civilization, the Indian when sick has refused all medicines, and looked only to incantations and the jingling of bells as a panacea to his ills. They are very prone to hang their faith on all the old traditional remedies of the past, and in many cases it is difficult to induce them to try anything else. It is related in King's American Dispensatory, "that J. J. Caldas, pupil of the celebrated botanist Mutis, who

travelled from 1802 for many years in the mountains of Peru, in order to examine the natural history and geographical distribution of the Cinchonas," states that the Indians who inhabit those regions, and among whom fever makes sad inroads, will not use it, believing that it heats the blood and the humors; and that the heaviest penalties are often inflicted to compel them to employ it as a remedy; and he remarks, "that this prejudice is much against the fact of their ever having been acquainted with its use, as they cling with the greatest obstinacy to their inherited customs, vices, and prejudices." "Ulloa and Humboldt also express the opinion that the Indians were unacquainted with the use of cinchona."

As there is a wider difference in the histological elements, the higher in the scale is animal life, so is there a wider field for disease, and consequently for the action of remedies; we might therefore reasonably expect to find from these sources valuable hints, as well as useful adjuvants from aboriginal pharmacopœia, instead of which we have to confess embarrassment and meagre unreliable intelligence. The substance of my investigation only proves how little is known, and ever can be known now, to answer the above question.

Should one desire information concerning legends, religious customs, missions, dress, antiquities, moral or social condition, traditions or official relations with the North or South American Indians, curiosity could more readily be gratified. Observations concerning disease and more especially medicinal remedies, are not so generously recorded, if indeed they were ever at any time made. For one, I was never at any time able to see in the Indian character and life, noble traits outweighing repulsive barbarity. The miserable hordes of degenerate beings, enfeebled but not benefited by society, are quite likely the too common association with our opinion of the Indians; undoubtedly we do not realize the *pride*, *energy*, *self-reliance*, *independence of thought and action* which must have characterized their primitive simplicity. They have been compared in this condition to the cedar trees, withstanding the storms of ages; the dying of the top branches alone

showing signs of decay. In one volume I saw at the Boston Public Library, published in the latter part of the last century, it was proved, at least to the writer's belief, that the Indians of the West are descendants of Jacob, and are in fact the long-lost tribes of Israel.

Before the landing of Europeans, the diseases common among the Indians were few in comparison with those which now debilitate their constitutions, and thin their numbers. Tribes are mentioned in which never were known to exist any deaf, dumb, idiotic, or cases of insanity; others where only one or two instances of a deaf and dumb child or lunatic. Scrofulous and pulmonary diseases have always existed among them; probably, too, common continued, intermittent, and bilious fevers, dysentery, and rheumatism. Small-pox, however, ophthalmia, and venereal complaints in their most severe and loathsome forms, are the result of their acquaintance with civilized nations. We can imagine these maladies, their nature unknown, attacking a people exposed to storms and winds, liable to colds, with insufficient and unwholesome diet, subjected, too, to extremes of heat and fatigue, carrying heavy burdens, a deer, for example, weighing two hundred pounds, for miles, victims of intoxication, and of their wounds and internal injuries from fighting, furnishing material for a virulence heightened and fatal. When, too, we learn that one-half their children die before youth, we can realize why Indian tribes are now becoming among the extinct nations of the earth.

It has seemed strange to me, that in the amalgam of races, which serves to constitute the present American character, the Indian has formed so inconsiderable a constituent. Their characteristics would prove quite as desirable as the African, which some philosophers would make us believe is the only remaining element necessary to its perfection.

Where Indian tribes have received treatment from physicians at military and naval posts, the result of their experience with them is, that grave operations in surgery are not well borne, and that doses in minimum rather than maximum quantity produce better results.

The management of disease, when left to native skill exclusively, consists in the use of charms, rude forms of baths, and simple herbs. Their incantations might be compared to homœopathy, often a harmless interference, while nature effects the curative process.

One form of their baths is constructed of a wigwam, covered with hides, some three or four feet in height, in which is a large vessel of water. Into this water are plunged heated stones, and the vapor gives to the patient, seated in the inclosure, a most effectual steam bath. Each tribe has its medicine men and women. Powwow, which signifies with us a noise, confusion, is in fact an Indian medical phrase, from their conjurations, attended with great noise and confusion, for the cure of diseases. Powwow is their term for a medical man, who is supposed to exercise dominion over nature and the unseen world, uniting the character of priest and prophet, and often that of juggler.

Beth root (Trillium pendulum) is much used by the Indian women to promote parturition, uterine hemorrhage, &c.; it is also used in connection with unicorn root (Aletris farinosa) as a poultice for scrofula, glandular swelling, &c.

Mulberry leaves (Morus rubra), steeped in human urine, for fomentations in orchitis.

Wild cherry bark (Prunus Virginiana) has always been used by them for its tonic effects, and also in dyspepsia, intermittents, and consumption.

Black cohosh (Cimicifuga racemosa) was given in rheumatism and for coughs. For rheumatism they used it in combination with poke-root (Phytolacca decandra).

Blue cohosh (Caulophyllum thalictroides), used by the squaws to ease parturition.

The water avens (Geum rivale), prominently mentioned by Dr. Wood, is valued for debility; it would appear the Chippewa Indians employ for the same purpose ragged cup (Silphium perfoliatum). The same tribe use yellow lily (Nuphar advena) in dropsy.

The well-known golden rod (Solidago odora), they use as a

beverage in sickness, probably like our tea, for which it has been claimed it is really a pleasant substitute.

Masterwort (Angelica atropurpurea) aromatic is used in flatulence and colic. The Senecio aureus, a species of groundsel, from its saline taste, was employed externally and internally as an antidote to poisoned weapons.

Sweet clover (Trifolium pratense), used by the Penobscot Indians for sore eyes; also made into a salve for burns.

Night-blooming cereus (Cactus grandiflora), used by the Mexican Indians in irritation of the bladder, intermittent fever, difficulty in breathing, cough, &c.

The root of the Actæa nigra, a variety not noticed in our Dispensatory, a species of baneberry, thus classified because the berries are deemed deleterious, was much esteemed as expectorant and cathartic.

In venereal diseases, for chancre, they employ the actual cautery and an herb called Rosia, resembling it is said sarsaparilla.

For gonorrhœa, pills of wild pigeon manure, the therapeutics of which is not stated; also an herb named Chancelayna, which grows plentifully in California, and is a bitter astringent.

Dr. Herbert Miles, Surgeon British Army, relates his experience of the employment of the pitcher plant (Sarracenia purpurea) among the Nova Scotia Indians. "It is given in infusion; a large wineglass is taken; the effect of this is to bring out the eruption. After a second or third dose, given at intervals of from four to six hours, the pustules subside, apparently losing their vitality. The patient feels better at the end of each dose, and in the graphic expression of the 'Micmac,' knows there is a great change in him at once." Its action assimilates vaccination, modifies completely the disease, prevents pitting, and renders certain a favorable prognosis for the genuine variola.

Says the Scientific American, "Youpon or Ilex cassine, a plant indigenous to the Southern States, but found only along the coast, is also used by them as an ingredient of the celebrated 'Black Drink,' which was used by the red men as a

medicine, and as a state drink at some of their religious festivals. Youpon is used in some portions of the South as a substitute for tea and coffee and other stimulants; and it is reported to be very beneficial to inebriates who wish to cure themselves of their love for liquor."

Deer's tongue (Erythroneum), used by the Missouri tribes for breast complaints.

This brings me to the end of my list as far as I have had opportunity to catalogue.

At the present day, amongst the masses of the people and the uninformed, there is supposed to be a wealth of knowledge among the Indians concerning the treatment of disease, and "Indian Vegetable Pills," "Indian Restorative Bitters," and the host of patent medicines with the Indian prefix, are among the most saleable preparations in the market; and in our large cities there are swarms of advertising quacks, self-styled Indian physicians, not one-tenth part of whom have a drop of Indian blood, and some I very much doubt ever saw a genuine "son of the forest." But the name takes; there is much in it, and always will be. Many regard the meadows, hills, and forests as laboratories, from which a medicinal agent for every known disease can be obtained, and that many of these panaceas are known only to our dusky brethren.

ON THE PROPER TIME TO COLLECT THE LEAVES OF BIENNIAL PLANTS.

BY JOHN M. MAISCH.

This is a subject which can be satisfactorily solved only in two ways, namely, by way of chemical, or of physiological analysis. The writer being incompetent to make any researches by the last-named method, there remained only the chemical way for him to attempt the solution of the important query, provided the proper material could have been obtained.

Of the three plants named in the query, lobelia, hyoscya-

mus, and digitalis, the first only is indigenous to this country; while hyoscyamus has been naturalized in a few localities, and digitalis is never found spontaneous in this country.

Regarding lobelia, I am unable to say upon what grounds it has been regarded as a biennial; as far as my own observations go, I cannot but consider it to be of annual duration only, never having, in the fall, met with any specimen, other than fruit-bearing, or in the spring with plants otherwise than bearing all the evidence of having just germinated. Gray, in his Manual of Botany (edit. 1868, p. 283), places Lobelia inflata in a group of that genus, having "slender, annual, or biennial, or, perhaps, sometimes perennial roots," but does not state what duration of life the officinal species has. Beck, in Botany of the United States North of Virginia (edit. 1848, p. 213), regards the plant to be biennial. That close observer, Dr. William Darlington, in Flora Cestrica (edit. 1853, p. 164), says of it, "biennial?" indicating that he was very doubtful of that statement. A. Wood, in his Class Book of Botany (1861, p. 477), says it is annual; and the same statement is made by Professor Carson, in his edition of Pereira's Materia Medica, 1854, vol. ii, p. 583, and by the late Prof. R. E. Griffith, in his Universal Formulary (edition by Prof. Thomas, p. 303). Eaton's Manual of Botany, 1836, p. 375, considers it a biennial plant. Chapman's Flora of the Southern United States says it is annual or biennial.

It appears to me from the foregoing that the weight of testimony is in favor of the annual duration of Lobelia inflata. If this is correct, then the question could only be raised whether the herb should be collected before, during, or after flowering. As far as the alkaloid lobelina is concerned, the experiments of Professor Procter (Amer. Journ. of Pharm., vols. IX and XIII), are conclusive that it is contained in the seeds in larger proportion than in the herb, and the few later investigators have either not touched this question, or coincide with his results; if, therefore, the alkaloid is the truly medicinal principle, there can be no question that the plant ought to be collected for medicinal purposes only while flowering, and when a portion of the capsules have been developed. This, I

believe, is also the experience of physicians, who prefer the herb with capsules and seeds to the fruitless herb; the former is, moreover, the state in which the plant is most readily collected, since it commences to bloom in July, and continues to produce its spicate flowers until late in the fall, while the first seeds are ripe usually early in August.

Regarding hyoscyamus, all pharmacopœias recognize the leaves only that have been collected from the second year's growth, and from the flowering plant. Among the various physiological experiments made on this point, I may be permitted to cite the results obtained in 1855 by Prof. C. D. Schroff, of Vienna. Operating with extracts, he found the quality of their action alike, but a considerable variation in the intensity of the effects. The herb of the first year's growth proved to be the weakest; the root of the same age a little stronger; much better effects were obtained from the herb of the second year's growth, and the strongest effects from the ethereal and alcoholic extracts of the seeds. The experience of Dr. Donavan (Pharm. Journ. and Trans., 3d series, i, 907) agrees with these results, as far as the leaves are concerned. He found the tincture of the leaves of first year's growth to be almost inert; when made from the second year's leaves, however, prompt in its action. It is proper in this place to call attention to a simple test, proposed by Donavan, regarding the difference of the two tinctures. He states, that if made from the first year's leaves, it will yield with water a clear mixture; but if made from the second year's leaves, a milkiness will be produced on dropping the tincture into water.

I am not aware that similar experiments have been made with digitalis, notwithstanding all pharmacopœias direct the use of the second year's leaves only. The chemical researches of Henry, Homolle, Labourdais, Morin, Kosmann, Walz, Poggiale, and many others, including the latest ones made by Nativelle, are devoted to one or more of the constituents of the plant, without reference to the time of their collection, and I have not been able to find any physiological experiments detailed in the works that I could consult referring to

this important point. Prof. A. Buchner, Sr., however, found (Repert f. d. Pharm., 3d ser., ix, 38) that minute quantities of digitalin are contained in the calyx and capsules, and that the seeds contain more of that principle than the leaves.

A few years ago, however, a statement was made by F. Schneider (Amer. Journ. Pharm., 1870, 221), which deserves careful investigation. He says, that the leaves collected in August and beginning of September of the first year, yield a deeply-colored infusion, of strong odor and taste, and give, with tannin, at once a dense precipitate, and with ferrocyanide of potassium, a strong turbidity after twelve or fifteen minutes.

The writer has no experiments of his own to offer, with the view of solving the query propounded, because reliable material cannot be obtained here from spontaneously-grown hyoscyamus and digitalis, and because, for lobelia, the question has been chemically proven by the able hands of Professor Procter, and his results are in accordance with the experience of medical men. In lieu of researches, the above short synopsis of the results of others is offered.

AN ESSAY ON THE INSECT ENEMIES OF DRUGS;

ON THE BEST MEANS OF PROTECTING SOUND DRUGS FROM THEIR RAVAGES, AND ON THE MEANS OF DESTROYING THEM WHEN ALREADY IN DRUGS.

BY W. SAUNDERS, LONDON, ONTARIO, CANADA.

The insects which take up their abodes in, and consume the various substances kept in a drug store, are more numerous than one might at first suppose, some few of them occurring in abundance almost every year, while others are less frequent or rare; hence the opportunities for investigating their habits are not always alike favorable. It would be a difficult task, were one possessed of much more leisure than has fallen to my lot, to undertake to exhaust this apparently small field of

research in a single season. I will, however, give you what I have been able to gather relating to two of our more common foes, and report, if permitted, on the rarer ones on future occasions as opportunities may present themselves.

In years past my own drug stock has suffered far more from destructive insects than it has during the current year. What to attribute this relative scarcity to I know not; there are so many influences operating from time to time favorably or otherwise on insect life—some of which elude our observation entirely—that one is often quite at a loss to give a reason why an insect should be present in the greatest abundance one year and comparatively rare the next, the circumstances in each case being apparently similar. In any case this scarcity is not to be deplored, not even with an accepted query on the subject in hand, for the destructive powers of some of the species are truly formidable where their numbers are sufficiently great.

First, because with me most injurious, I would place what has been called by Dr. Fitch, State Entomologist of New York, "the Indian meal moth," *Tinea zeæ*, so named because it was first found in Indian meal, although by no means exclusively partial to it. The varied character of the appetite possessed by this creature during the larval or caterpillar stage of its existence, is something wonderful, very few substances seeming to be distasteful to it. It thrives equally well on *aconite root* and *taraxacum*, devours both with avidity, large roots being frequently so completely riddled by the numerous channels made through them that one can crush them between the finger and thumb. In the case of aconite it would be interesting to know whether the active and poisonous principle of the root is actually appropriated to the nourishment and sustenance of these worms as well as the starchy matter, or whether they possess the power of eliminating from their food noxious or injurious elements, and thus reject the alkaloid in the frass. This point I have not been able to determine. Rhubarb, either in root or powder, is esteemed a dainty morsel by this omnivorous creature, and is eaten as readily as pearl barley or burdock; ergot is also a

favorite article of diet, and I have reared it on currie powder, and have even found it feeding on Cayenne pepper. Surely with such an accommodating appetite this insect could scarcely ever die out for want of suitable food.

When the material fed on is in large pieces, such as roots, this larva forms cylindrical or sometimes somewhat tortuous burrows or excavations through it, which are lined with a silky web, more or less of which protrudes about the orifices, where it is somewhat mixed with rejected fragments of the material and the excrement of the worm. Where the substance is in smaller pieces, such as ergot or pearl barley, or in case of a crushed root, the larva fastens together with silken threads a sufficient number of particles or pieces to enable it to provide for itself within a secure place of retreat.

When full grown this caterpillar measures about half an inch in length, and is nearly cylindrical in form. Its head is of a yellowish-brown color, with a polished horny appearance, and on the second segment, immediately behind the head, is a yellowish, horny-looking plate, which covers most of the upper part of the segment, and with a surface resembling that of the head, but of a paler hue. There is also a spot on the last segment of a similar character. The color of the body is dull whitish, with a few minute tubercles or smooth raised dots scattered over its surface, from each of which there arises a fine pale hair scarcely visible without a magnifier. When disturbed it moves forward, or wriggles itself out backward with almost equal facility.

When fully mature the larva changes to a chrysalis within the chamber already excavated, where it reposes in a slight silky cocoon, attached to the side of the silk-lined chamber. The cocoon is made of very white silken fibres, and through this slight covering the pupa may be readily seen. The latter is about one-third of an inch long, of a pale dull yellowish color, ringed with darker brown lines, the large black eyes of the future moth showing through this partially transparent inclosure.

After remaining in this inactive condition for a sufficient length of time, varying with the period of the year and the

temperature of the atmosphere, the winged moth bursts its bonds and prepares itself for flight. When fresh from the chrysalis, in common with other moths, its wings are but partially developed, are not more than one-fourth of their normal size, and quite incapable of sustaining in flight the weight of the body to which they are attached, but shortly, as soon as the newly escaped insect can place itself in a favorable position where the wings can hang downwards, a marvellous process of growth begins, when in a few moments the wings acquire their full dimensions. When we consider that this growth implies, not a mere extension of the membranous structure of the wing only, but the maturity and expansion of every scale upon the wing, the individuals of which appear but as the finest dust to the unaided eye, we may well wonder at the intricate system of circulation and nutrition by which such a marvellous change is so rapidly brought about.

When its wings are expanded this moth measures from one-half to six-tenths of an inch across, and may be readily recognized by its having the basal third of the wings dull white or cream-colored, while the outer portion is of a dark gray or blackish shade; they have also a somewhat greasy-looking surface, and the scales which cover the wings are easily rubbed off when the moth is handled. There is usually a dull yellowish spot more or less defined a little beyond the middle of the wing, and sometimes the hind margin is slightly banded with the same color. The hind wings are nearly white, with a glossy surface, and margined with a long silky fringe. The body is dark-gray, with sometimes a little yellowish behind the head. Beneath, the fore wings are paler than above, with a satin-like lustre, and the hind wings are whitish.

There are some substances which this insect seems to avoid; the following I have never known to be injured, although freely exposed where the insect was abundant: Podophyllum, leptandra, Menispermum canadense, gentian, gelseminum, hydrangea, Geranium maculatum, sanguinaria, senega, and sarsaparilla. The cinchona barks also seem free. Cimicifuga

in the unground state has escaped injury, but when crushed or coarsely ground it is soon taken possession of by this foe.

The meal moth, *Pyralis farinalis:* the larva of this insect very much resembles that last described, but the moth it produces is very different. The common name meal moth has been given to it on account of the injury it does to various farinaceous substances. *Tinea zeæ*, the insect last referred to, is, we believe, a native of this country, but *Pyralis farinalis* is an imported insect, brought over from Europe, where its destructive habits have long been known. I have found this insect very partial to the flaxseed in its unground state. While quite young the larva fastens together a number of the seeds into an irregular mass by means of glutinous silky threads, constructing in the centre a hollow chamber in which it lives, the diameter of which is enlarged as the larva grows. It does not confine itself to flaxseed, but attacks other substances as well, especially those of a farinaceous character, although it is not nearly so general a feeder as *zeæ*.

The caterpillar is of a dull whitish color, with the head, a plate on the upper part of the second segment, and a spot on the terminal segment pale reddish-brown, with a polished, horny-looking surface. This worm may also frequently be found in old flour barrels. Its history in the chrysalis state is very similar to that of the insect last described.

The perfect moth may frequently be seen on the walls and ceilings of rooms sitting with the hinder segments of its body curved over its back. When its wings are spread it measures about an inch across. The fore wings are light brown, with a large dark reddish-brown spot at the base, and another smaller one near the tip of the wing. Two wavy, whitish lines extend across the wings, the inner one bordering the dark patch at the base. The hind wings are paler, with wavy whitish lines, and clouded with spots and streaks of pale brown. The under side is much paler than the upper.

With regard to remedies, prevention is better than cure; hence by providing proper vessels in which to store the various substances the pharmacist keeps in stock with suitably fitting covers, much damage of this sort may be prevented; but

where the insects have already gained foothold I know of no better method of destroying them than one suggested by Dr. Squibb, which is by the vapor of chloroform. A ready way of applying this is to pour a little of the liquid on a small piece of sponge, and place it in a shallow tin box or other suitable vessel, and close the lid of the package containing the infected drug tightly, so as to prevent free access of air. The vapor of the chloroform, in consequence of its density, falls on the material, and diffuses itself through the entire mass, carrying death wherever it goes. Where the moths are found to be abundant, they may be attracted and poisoned while in the winged state by exposing cloths wet with a mixture of molasses and strong solution of arsenic, to which a few drops of essence of pear has been added.

ON ORANGE-COLORED GLASS AS A MEANS OF PROTECTING VOLATILE OILS.

BY WILLIAM PROCTER, JR.

QUERY 18.—What is the actual value of orange-colored window-glass as a means of preventing the chemical action of light on volatile oils?

THIS query appears to have been suggested by the use made of such glass by photographers, to prevent the decomposition of chloride and iodide of silver in the working of their processes, so as to avoid the need of being in a dark-room. It is still a mooted point how far such glass will prevent the passage of actinic rays, and philosophers even disagree as to where in the spectrum, or beyond it, lies the greatest chemical influence. The question as presented above is, however, a practical one, intended to decide whether oils in colorless glass bottles, if kept in cases glazed with orange-colored glass, will be as exempt from actinic action as though placed in a dark closet, and if so, whether orange-colored glass is the proper material to construct glassware for this and other purposes where actinic action is to be avoided? About six months ago a closet was prepared with glass doors of orange

color, and the regular set of dispensing bottles of half pint capacity arranged in it on shelves, to the number of about thirty distinct oils. The bottles had previously been kept on open shelving; and before being placed in the closet each bottle was emptied, thoroughly cleansed of resinous and other deposit, washed with alcohol and dried, when the clear oils were returned. At the same time two small vials were filled with oil of peppermint and two with oil of lemon, both oils being of the best quality. One of each was kept in the oil-closet and the other set in a closet near the window of colorless glass. The writer was too much occupied with other matters to make corresponding experiments in and out of the closet with all the oils, and hence no result was arrived at of a character satisfactory in resolving the query *pro* or *con*. None of the oils in the closet exhibited deposition of resin, crystalline matter, or other deposit worthy of note. So far as could be remembered, their color was but little changed, but, as in all respects except the light, they were subjected to the previous conditions surrounding them, being frequently opened for dispensing, it will be interesting to ascertain if their modified condition as regards light really retards atmospheric oxidation. The oil of peppermint kept in the closet appeared of the same color (nearly colorless) as that kept in the light, but its odor was less marked to a perceptible degree. The oil of lemon, in both conditions, had a flocculent sediment, but was otherwise so nearly alike as to appear the same when applied to the nose, yet the oil in the vial exposed to light was evidently lighter in color by bleaching.

A vial of (expressed) oil of orange-peel, after two months' retention in the closet, was found to have undergone the usual deterioration.

The writer, in offering these remarks, does not consider them as a reply to the query, but as showing that he has not intended to neglect his duty in the matter. If the Association will continue the subject, he will carry on the observations another year and report.

NOTE ON RHUBARB.

BY EDWARD R. SQUIBB, M.D.

The New York market has been very abundantly supplied with rhubarb of moderately good quality throughout the year, and always at low prices, ranging from 40 cents to $1 per pound. Neither the higher nor the very low grades have been as abundant as during last year. Since the fall in prices some three years ago, half picul chests are more and more rarely seen in the market, and during the past year the writer does not remember to have seen one of smaller size than the whole or picul chest of about 165 pounds. All the grades seem better sorted, that is, more uniform in quality throughout each chest, than formerly, and it is rare to see the mixtures that were common some years ago. All the rhubarb of the common market of the past year has been notably deficient in the aromatic rhubarb odor. Even upon recent fracture, or when ground, it has only the feeble, rather nauseous, astringent odor, if an odor may be described as astringent, approaching that of ground nutgall. How or why it is that the old and valuable characteristic odor is so rarely met with of late years, even in the parcels of finest quality in other respects, seems without any probable explanation. This rather agreeable and peculiar aromatic odor has always been to the writer one of the very best indications in the selection of rhubarb, and he remembers that, in comparing experience and judgment with Professor Procter on this point some years ago, he found his opinion confirmed by that good authority. It may be suspected perhaps that the increasing demand for the drug may have caused it to be more rapidly cultivated or collected from new climates and new soils, and that more rapid processes of drying by artificial heat may have been adopted. These aromatic odors in vegetable substances in general seem to be characteristic of perfect maturity, and to result from natural processes which resemble fermentations. These processes seem to be delicate, slow, and sensitive, and yield aromatic ethers and phenols which

are very volatile and diffusible, and have a very loose or easily decomposed molecule. Besides, these processes seem generally to pass on more or less rapidly, as in fruit, &c., from maturity into decay where an entirely new set of reactions are set up. Thus it is not perhaps an overstrained inference, or deduction from better known phenomena, to suppose that the aromatic odor of rhubarb is an indication of maturity and perfection, more pronounced in the better varieties and conditions of the plant, and better preserved in the drug by some methods of curing than by others. Hence it follows that the aromatic properties may or may not be produced as the proper varieties in the proper soil may or may not be allowed to ripen. And when produced it may or may not be dissipated by artificially rapid, or by naturally slow processes of drying. However this may be, it is very certain that the aromatic properties of the finer qualities of rhubarb are so rapidly diminishing of late years, that it is rare to find a chest at this time which possesses this characteristic in moderate degree, even when the color, texture, and other sensible properties may be unexceptionable. This aromatic character is believed by many good authorities to be quite important in a therapeütic point of view, and this belief is earnestly concurred in and supported by the writer. Refinement in therapeutics must keep pace with the accuracy of observations and the delicacy of distinctions in pathological researches, in order to effect that symmetrical progress in knowledge which is the soundest and the most useful. The peculiar effects of rhubarb as a stomachic tonic, whereby it is so useful to a large class of dyspeptics, seem to be merely supplemented and aided by its aperient properties ; and these effects seem so intimately connected with its aromatic properties as to suggest the relation of cause and effect, and therefore make these properties, or the condition of maturity and perfection which these properties indicate and secure, an element of chief value. Well supplied as the market has been with good grades of rhubarb at low prices, chests of choice quality, either in color or texture, and more especially in odor, have been very rarely seen. And the London market, as rep-

resented by the writer's correspondents, has not offered a very much better selection than that of New York. Three samples are herewith submitted, which are fair specimens of as many chests which may perhaps be accepted as the very best grades offered by the London and New York markets during the past year.

The first sample in box No. 1, is from a chest of round rhubarb imported by Messrs. Dodge & Olcott. In the case of this chest, as in the others, every piece was bored to the centre, and separately examined. The cost was $1 per pound currency. About one-half the pieces are quite unexceptionable in color and texture, while almost all are perfectly sound, while the odor, though feeble, is better than that of any other chest seen in the New York market during the year. Not more than five or six unsound pieces were found in the chest, and the number of pieces which are discolored at the centre is not great, neither is the degree of discoloration in any of these very great. The texture is universally compact and the root heavy, but the apparent proportion of oxalate of lime is below the normal of finest grades, and the pieces, as in most round root, are not very dry. The selected root from this chest is of rather exceptionally good quality, and the powder made from the remainder is unexceptionable and yields a very nice fluid extract.

The second sample, in box No. 2, is from a chest of flat rhubarb, selected as the best in the London market, by Messrs. Arthur S. Hill & Son. The cost of this in London was 3 shillings and 4 pence per pound, which with the 10 per cent. duty, and charges, and gold premium, makes the neat cost of about $1.20 per pound. Less than one-half the pieces of this chest can be accepted as select rhubarb for the more delicate uses of the drug, though not one single unsound piece was found in the chest, and but few that were materially discolored in the centre. It was therefore better sorted, though not quite so good rhubarb as the first chest, though drier. The general color and texture were good, and the apparent proportion of oxalate of lime nearer to the normal

of mature root than in the first chest, while the odor is neither quite so strong nor quite so good in quality; nor is the powder quite so nice, though perhaps practically unexceptionable for its best uses and effects.

The third sample, in box No. 3, should be examined after the others. It has the appearance of a trimmed, and otherwise artificially made up rhubarb, and it is very evident that much pains and skill have been artistically expended upon its appearance, and it is really very handsome indeed. It will remind any one at once of the handsome artificially prepared Austrian rhubarb, which is constantly sold as "Turkey rhubarb" at high prices, but which is comparatively valueless in medicine. But the pieces are much larger, the texture appears different, and more than all the odor is that of the best variety of the old Russian rhubarb. Each piece is bored entirely through, just as the best Russian used to be, and the internal texture and color appear to be as typical as is the odor. None of the pieces have been broken, because the fractured surfaces can only be judged when freshly made. But if, when now fractured freshly for the critical inspection of the members present, the fracture and internal odor should sustain the character indicated by the external appearance, this is the finest specimen of rhubarb the writer has seen for many years, and is fully equal to the choicest parcels of the now long-extinct Russian drug. It seems to have been made from fine large mature roots of Chinese or Tartary rhubarb, dried, preserved, and prepared with much care. This sample is from the London market, and was sent to Messrs. Recknagel & Co., of New York, as representing a chest which was offered at 12 shillings sterling, equal to about $4.20 currency, in New York. It however found no buyer here until the writer ventured to send for it as an experiment, well knowing that it would be of very slow and doubtful sale, at small profit.

The fourth sample, in box No. 4, is from the cabinet of the writer. It is a specimen of undoubted Russian rhubarb, taken from a choice case in the writer's possession some ten years ago. Though carefully kept in a bottle in a dark closet, it

has lost most of its odor, and become lighter in color, but still may serve as a standard for comparison.

BROOKLYN, August, 1878.

ON THE CONSTITUENTS OF THE ROOT OF FRASERA WALTERI.

BY GEORGE W. KENNEDY, OF POTTSVILLE.

AMERICAN COLOMBO, the root of Frasera Walteri, belonging to the natural order Gentianaceæ, is an elegant indigenous plant, and the only one of its genus. It flourishes abundantly in the United States, especially in Arkansas and Missouri. Its period of flowering is from May to July; but the stems and flowers are produced only in the third year, the radical leaves being the part of the plant previously appearing above ground; from this form of growth, it is inferred that the root should be collected in the fall of the second, or spring of the third year. The question has occasionally been asked: Does American colombo, or, as it is sometimes called, American gentian, contain any berberina? This question might readily be answered, It does not, inasmuch as berberina has been found but in a limited number of natural orders, such as Berberidaceæ Menispermaceæ, Xanthoxylaceæ, and Ranunculaceæ, and yet there are few of the known alkaloids so widely diffused as this one appears to be in the vegetable kingdom, and judging from the yellowish color of the root and the bitterness combined, both characteristic and essential of the presence of berberina, we might suppose that it contains berberina.

A query was presented for acceptance, at the last meeting of the American Pharmaceutical Association, held at Cleveland, Ohio: "Does Frasera Walteri contain Berberina?" and was accepted for investigation. I accepted it, and so informed Professor Procter; but before I signed my name to the same some one else had accepted it; so I came to the conclusion

to write an independent essay on the above, with the following results:

Treatment for Berberina.—The coarsely powdered root was exhausted by repeated decoctions with boiling water, and the mixed liquids, after filtration, were evaporated to the consistence of a soft extract; this was digested several times with stronger alcohol until completely exhausted. One-fourth of its bulk of water was added to the tincture, and five-sixths of the alcohol distilled off; to the residue, while still hot, sulphuric acid was added in excess, and the liquid allowed to cool, no crystalline deposit being formed, thus proving the absence of berberina. Had berberina been present, crystals of sulphate of berberina would have been perceptible.

Not being satisfied with the above examination, I made a second investigation, and with the same result as above, and feeling confident that it resembled either colombo or gentian in its medicinal constituents, I then proceeded to make an examination of it for gentisic acid, and gentiopicrin, both principles being found in the root of Gentiana lutea; the first being the acid, and the latter the bitter principle of the root.

As American colombo and gentian both belong to the same natural order, "Gentianaceæ," and after failing to find berberina, I went to work in strong faith that I would surely find the medicinal constituents of gentian in the root of Frasera Walteri.

Treatment for Gentiopicrin and Gentisic Acid.—The root was coarsely powdered and percolated with alcohol, until exhausted; part of the alcohol was distilled off, and evaporated to the consistence of a soft extract; this was treated with water, and the aqueous solution twice with animal charcoal, which absorbed all the bitterness; extracted the bitterness from the charcoal with alcohol; evaporated the tincture; treated the residue in solution with oxide of lead, to separate the precipitable matter; removed the lead by sulphuretted hydrogen; evaporated to the consistence of syrup, and agitated the residue with ether, which precipitated the bitter principle; this was of a crystalline structure, bitter, soluble

in alcohol and water, and insoluble in ether, neutral to test-paper, and not precipitated by tannic acid; this principle is called gentiopicrin, but, as has been suggested, should be called gentianin.

Gentisic acid was obtained also from the above extract, after being exhausted with water in search of the gentiopicrin, by treating with ether, filtering the ethereal solution, and allowing it to evaporate spontaneously. It is in needle-shaped crystals, pale yellow, insoluble in water and soluble in alcohol and ether, and turns litmus-paper red.

From the above, it will be seen that Frasera Walteri contains the same active constituents as gentian, and instead of being called American colombo, should be called American gentian, which I think would be the proper name.

NOTE ON ERGOT AND ITS PREPARATIONS.

BY EDWARD R. SQUIBB, M.D.

There is, perhaps, no better example of the unity of pharmacy with practical medicine than is seen in a review of the career of ergot in the Materia Medica. The relation is a closer one than that of interdependence, and the support of a common interest from different bases of support. It is rather the relation of a single cause to a single effect. If knowledge and progress in medicine may be represented by light, then the correlation of electricity, magnetism, and heat in lighting up the universe may not unfairly represent the correlation of pathological research, chemistry, and pharmacy in therapeutics.

From 1807, when Dr. Stearns, of Saratoga County, recalled professional attention to its use in medicine, its history in the Materia Medica is most varied and interesting; and, from a simple parturient and supposed example of a specific effect upon a single organ, it has come to be applied upon a broad general principle, and is already sufficiently studied to extend its utility beyond anything that could have been foreseen. If

the influence of pharmacy could be subtracted from this beneficent result, as it cannot be, it is highly probable that the remainder would be comparatively small. The ergot in substance, or by infusion, or by tincture, could have advanced slowly, if at all, to the present state of knowledge in its application. Professor Procter, in a paper published first in the Proceedings of this Association in 1857, p. 127, was the first to give uniformity and permanence to any preparation of ergot, thus rendering its systematic and accurate administration practicable by so simple a proceeding as the addition of an acid to preserve it from those changes and uncertainties which, for half a century, had stood in the way of any very accurate investigation of its nicer therapeutic effects. Various investigations, chemical and pharmaceutical, had gradually led to this, but the various extracts, fluid and solid, and the various preparations under the name of ergotin, had all seemed to partake of the perishable nature of the drug in substance, so that the administration could be neither accurate nor uniform. And without this factor of tolerably fixed and known quantities in dosing, effects must always be liable to such confusion and uncertainty as to render the difficulties of accurate investigation almost insurmountable.

Although it may be quite true that when the life of one, or the lives of two human beings depend upon the parturient effects of a dose of ergot, there is no better practice, nor any that is so safe, as the use of fresh ergot in freshly made powder, yet experience has abundantly shown that it is upon the age and condition of the ergot, rather than upon its being ergot, that the safety depends, and that this age and condition can rarely be known with that certainty which is necessary when human life depends upon it. Hence it is that the elements of greatest importance in the use of ergot, as indeed of the whole Materia Medica, are to get the drug in good condition, and then to preserve its activity from change, so that its quantities may be uniform; and this is pharmacy.

Modern investigation and experience have shown that the principal and prominent effect of the administration of ergot to human beings, in adequate quantity, is to cause contrac-

tion of the involuntary or unstriped muscular fibre wherever this is found. The gravid uterus being constituted principally of this variety of muscular tissue, this was the organ upon which its effects were first observed, and it was long used as a parturient, both by empirics and by the medical profession, before its more general effects were recognized. One of the most important deposits of unstriped muscular fibre is that which constitutes the middle coat of the arteries, and any agent which causes contraction in this, diminishes the quantity of blood which passes through the vessels, and so modifies the nutrition of diseased parts. Hence the uses of ergot in cerebral and spinal congestions, in capillary hemorrhages, in bloody tumors, and especially in tumors and hemorrhagic affections of the uterus, such as fibroids, polypi, &c. As a parturient, a single dose or two is sufficient, and it matters little in what form or how that is given, if the quality be assured and the quantity sufficient. But for many of the other uses it requires to be taken for weeks or months in full and frequent doses, as the only means of keeping up its effects until the cure is established, and hence the prime necessity for a stable and uniform preparation of the drug.

The first requisite to any trustworthy preparation of ergot is, of course, a uniform good quality in the drug, and this is by no means easy to attain. The market is now overstocked with ergot at extremely low prices. Tons of it might be had at sixteen to eighteen cents per pound, but it is all so small as to render it almost certain that it is from oats, barley or wheat, rather than from rye, while its deficiency in odor and taste, and its uncleanness, forbids the idea of its being trustworthy. Most of it is imported in bags, and thus only by chance can arrive in proper condition. Much of it is contaminated with the seeds of various weeds, and requires much labor in cleaning, as the weed-seeds are often very bitter and may be poisonous. It is not unfrequently wormy, or bears the marks of having been cleaned from worms and worm-dust, to improve the chances of sales and profits. Occasional lots, and these often large lots, look as if they had been washed, and suggest the idea of having been partially exhausted for the making

of some of the so-called "ergotins." Hence it may be easily understood that to obtain a uniform supply of good ergot is a very difficult matter, even with the screw of price entirely taken off. Throughout the present crop the writer has paid various prices, from $1.25 down to twenty-two cents, without always being able to get what was desired, though always on the alert in a large market, and always in the presence of far lower prices. Many good authorities state that wheat and oat ergot is as good as that from rye, and some even give the preference to that from wheat, but after many years of pretty close observation, the writer has failed to convince himself that these cheaper varieties are as good. They are certainly very inferior in odor and taste, and it is not an unfair inference, nor without natural analogy, that it finds better conditions for growth in its original and more natural habitat in the paleæ of the rye, where it certainly grows most vigorously.

The existence of one or more active principles in ergot, which may be isolated for therapeutic use, has been very generally believed, and various substances have been extracted and sold under the name of ergotin, those of different makers having different properties and different doses, but all producing some of the effects of ergot, though in very different degrees. After a careful attention to the literature of this subject, and comparing it with the results which seem to have been realized in practice by experience, the writer does not believe that there is an active principle separable from ergot which, in any proper sense, represents the drug. Like senna, rhubarb, and many other drugs, its effects seem to be dependent upon a natural association of its various separable elements. If this be true, there is no such thing as ergotin, and the various substances so called only represent the activity of the drug as they represent more or less perfectly its entire composition. Of course certain of its constituents, such as lignin, starch, fixed oil, gum, &c., are known to be inert, and such being excluded by the choice of a proper menstruum for extracting it, the nearer its preparations come to representing or containing all the remainder of the drug the better. The molecular constitution of the active portion of the drug seems,

however, in its natural condition, to be loose, and like a slow fermentation, to be undergoing slow molecular changes, so that by age its peculiar activity is slowly diminished until finally lost. This process of change seems to be arrested by acids, just as many other delicate slow changes are; and whether this be effected by the substitution of a more permanent acid for a less permanent one, in one or more salts, as has been suggested by Professor Procter, but not distinctly proved, or how it is effected, seems as yet unknown. It is, however, well established that the addition of about one per cent. of acetic acid, which is added to the officinal fluid extract of 1860, renders this liquid preparation permanent; at least the writer has known the same preparation to be continuously used as a parturient for six years without apparent change in activity, though watched closely for such change throughout the time, until the parcel on trial was all used. The ergot in the grain, however well kept, is known to become inactive without known change in appearance, though the sensible properties, such as the odor and taste, may, and probably do, change. Ergot in powder is known to diminish in activity much more rapidly than when in grain, and probably soon becomes inert. The tincture and wine of ergot are believed to change, though more slowly than the ergot in substance, whilst the extracts and so-called "ergotins" are all supposed to change more rapidly than the tincture. Much of this latter, however, is traditional, rather than exact knowledge, and must be presented as such.

There can probably be no better preparation of ergot than the officinal fluid extract of the U. S. Pharmacopœia of 1860.*

* In the last revision of the U. S. Pharmacopœia the formula and process for this fluid extract have been materially changed; first, by the introduction of glycerin, and next by adding the acetic acid to the preparation after the percolation, instead of percolating the drug with an acidulated menstruum. It is difficult to account for these changes in a preparation so well established and so well tried without known complaint. The addition of glycerin may have been to bring it into uniformity with other fluid extracts—a uniformity of very doubtful utility at best—but the change in the use of the acetic acid seems still more objectionable. The present officinal fluid extract will not serve to make the solid extract from.

The formula for this was published by Prof. Procter in the Proceedings of this Association in 1859, and the writer has made it continuously by this formula ever since. From this experience in making, which now amounts to many thousands of pounds, and from frequent opportunities of hearing of its activity and its effects, as well as of its permanency, the above statement of its value is made up. When given in frequent large doses for a long time, however, as is required for many of the more modern uses of the drug, it becomes very disagreeable, and occasionally deranges the stomach, producing nausea, loss of appetite, and consequent debility. Occasional intermissions in its use, with other suggestions of care and skill, will often relieve the stomach for a time without material intermission in the effects. It has also been often and much used by hypodermic injection, generally through the integument of the abdomen, in order to relieve the stomach, and it generally acts promptly and energetically when thus used, though in smaller dose; but from being loaded with organic matter, and containing alcohol and a little free acetic acid, it is very apt to produce small abscesses, and thus cause much suffering. Indeed it is by no means well adapted to hypodermic use, and such use of it has always been discouraged by the writer. It has also been frequently used as a topical application to the os uteri upon cotton-wool, but is equally inappropriate to such uses on account of the irritant action of the alcohol. Physicians who observe closely, and who by looking for effects get rid of the trammel of arbitrary doses, appear to be most successful in the uses of ergot, and such physicians often, if not generally, use this preparation in much larger quantity than the doses given in the older books. It is most frequently used in females, and for affections of the uterus, and here an excellent indication of its maximum useful effects is easily reached in most cases by the production of uterine colic. In the treatment of fibroids, polypi, &c., it is perhaps the best practice to begin with the standard dose, and increase this until uterine colic occurs, and then diminish the dose so as to come just short of this in the succeeding continuous administration. The dangers of ergotism or ergot

poisoning seem to have been overrated, since the writer has diligently inquired for such results from those who use it most largely, but has heard of no instance of hurtful effect. Dr. A. Jacobi, of New York, who has probably used it as frequently and in as large quantities or doses as any one in this country, with both adults and children, and who is competent authority, and a close observer, recently replied that he had never seen an instance of ergot poisoning, nor heard of one in the practice of his associates. Notwithstanding this, he and all careful practitioners are always most careful and most watchful in this respect, and probably their exemption from bad effects depends upon their seeing indications of danger before they reach the point of danger. Besides, it is probable that the ergot poisoning described as the result of eating ergotized food, &c., could only occur among an underfed, semi-scorbutic people; or under other conditions not present in cases ordinarily requiring medication by ergot. Dr. W. C. Wey, of Elmira, who has also used ergot freely, had at least one case in which it had been used in the treatment of a fibroid tumor of the uterus, with occasional interruptions, by the stomach, hypodermically, and topically, during a period of more than two years, not only without poisoning, but with great advantage.

In January of 1869, Prof. Langenbeck, of Berlin, first used what is loosely described as an "aqueous solution of secale" by hypodermic injection, in the treatment of aneurisms, with marked advantage. This practice is described in the Berlin Klinik Wochenschrift, and an epitome of the paper is published in Ranking's Abstract for July, 1870, p. 223. In the same Berlin Journal for 1872, Dr. Hildebrandt published the results of hypodermic injections of ergotin in the treatment of uterine fibroid tumors. This paper is epitomized in Ranking's Abstract for January, 1873, p. 248. This treatment when tried in this country seemed to be difficult and uncertain, for want of a trustworthy and uniform preparation which should fairly represent ergot, and be adapted to hypodermic use, and at the request of Drs. J. Marion Sims, of New York, and W. C. Wey, of Elmira, the writer undertook what seemed

to be a hopeless task, of making a preparation well adapted to hypodermic use.

Disbelieving in the existence of any separable active principle in ergot at all analogous to the morphia of opium, no preparation seemed available except an extract which should be soluble in an aqueous menstruum. Then knowing the difficulty with which non-diffusible extractive matters are absorbed when deposited in the subcutaneous cellular tissue, and the liability of such matters, however bland, to cause troublesome abscesses, the problem seemed to be impracticable. After a good deal of time and trouble given to the matter, and many complicated trials, which need not be detailed, the best practical result reached was that of making a solid extract of ergot by the evaporation of the fluid extract of the U. S. Pharmacopœia of 1860, at a very low temperature, by mechanical stirring.

If this fluid extract, carefully made by repercolation from good rye ergot, without any heat, be evaporated in a shallow capsule in a bath of water of 50° C. = 122° F., by active and continuous stirring, until it is reduced to one-sixth of the weight of the original fluid extract taken, the result will be a spongy extract of a light brown color, full of air incorporated by the mechanical agitation, and looking a little like pulled molasses candy. This extract has the full odor and taste of the fluid extract, concentrated by condensation, and probably has the full therapeutic value of the ergot from which it is made, and each grain of it represents six minims of the fluid extract, or six grains of the ergot from which the fluid extract was made. It is quite insoluble in cold stronger alcohol, but entirely soluble in diluted alcohol, and also is easily soluble in water, with the exception of an insignificant residue which is easily filtered out. Its solutions are slightly acid to litmus-paper, and have their ergot odor strongly increased by the addition of alkalies. The concentrated solution in water is turbid before filtration, but after filtration is of a rich deep garnet brown color. How this extract or its solutions will keep is of course unknown, but the probabilities of keeping unchanged are quite favorable in regard to the extract, but unfavorable

for the aqueous solution. A five-grain pill of this extract of course represents the mean dose of thirty minims of fluid extract, or thirty grains of ergot, and it is not only much more easily taken, but in delicate conditions of stomach is much less liable to produce nausea, loss of appetite, &c. It does not, however, always agree better with sensitive stomachs than the fluid extract, nor does the stomach always tolerate it much longer. Hence it is very desirable often to relieve the stomach altogether for a longer time than the brief intermissions that can be permitted without losing ground already gained by the treatment; and to effect this, hypodermic and topical administration may be resorted to. Hypodermic medication is merely a short cut into the circulation whereby the process of digestion and assimilation and the organs by which this process is effected are avoided, the absorption taking place directly from the cellular tissue. Hence the therapeutic action is more prompt; and in the case of medicines which are liable to decomposition in the process of digestion, or to loss by entanglement with the fecal matters, smaller quantities are required to produce a given effect. But then, as most medicines are irritant, or at best liable to act as foreign bodies when introduced under the skin, they will more or less frequently cause abscess and painful irritation, and this in proportion to quantity, irritant nature, and their being more or less loaded with matters which are not diffusible. The filtered aqueous solution of this extract of ergot, though not well adapted to hypodermic use, is better adapted to it than the fluid extract, and perhaps is as well adapted as any preparation of the drug can be under the supposed required conditions. Such a solution has been used in this way with variable success. In some hands it seems to have been moderately and usefully successful, in others less so, while in some it has produced abscess so often that it was soon abandoned. The solution may be made of almost any desired strength, but that which seems to have answered best is the same as the fluid extract, or a minim for each grain of ergot represented in the extract. To make this solution, sixty grains

of the extract is weighed into a small vessel and dissolved in about four fluidrachms of water by stirring. It is then poured into a small wet filter supported over a vial marked for containing just six fluidrachms, and when the liquid has passed through, the filter is rinsed through with water until the measure of six fluidrachms is reached. This solution should be made every week or two, or in summer more frequently, until its permanence be ascertained. If desired, it may easily be made of double the above strength by halving the proportion of water, but what is thus gained in the quantity of the injection is perhaps overbalanced by the disadvantages of density in retarding the absorption.

This same solution seems well adapted to use as a topical application, the desired dose being put upon a dossil of cotton-wool, and this applied to the os uteri, with another dossil behind it. It might be inferred that this would be a very imperfect method of administration, and when first proposed by Dr. Wey as an alternative method, the writer predicted its failure, not being then aware of a somewhat similar practice in Germany as long ago as 1836. Dr. Wey, however, succeeded well, and produced the characteristic uterine colic within two hours or less. This topical method may also be used by means of suppositories, and the best vehicle for the extract seems to be the mixture of gelatin water and glycerin, which, when in proper proportions, make a very firm jelly, wlich does not become hard, and keeps indefinitely. Beside, it melts at a gentle heat, and is readily soluble in aqueous liquids. This is but a nicer and more simple form of the compound used for the inking rollers of printers. It seems not improbable that oleic acid might be used as a vehicle for this extract, thus adapting it to dermic administration, but as yet no trials have been made.

BROOKLYN, August, 1873.

NOTE ON THE ASSAYING OF PREPARATIONS OF CANTHARIDES.

BY JOHN M. MAISCH.

THE writer has very little that is new to add to the remarks concerning the assaying of cantharides, contained in his paper of last year. Supposing that most of the cantharidal cerate and collodion is probably made from the commercial article of powdered flies, it has been his intention to take notice likewise of the probable adulterations that are likely to be present in them, and the most important of which is euphorbium, and it became necessary to ascertain what relation rosin and cantharidin have to simple solvents.

The following statements concerning the solubility of rosin and of the resin of euphorbium, are found in Gmelin's chemistry: "Euphorbium resin is soluble in alcohol, ether, and oil of turpentine, and slightly soluble in ammonia-water and warm potassa (Braconnot, Brandes). Colophony dissolves in bisulphide of carbon (Lampadius), and in cold carbolic acid, it dissolves easily in alcohol, ether, wood spirit, fat, and volatile oils (Barreswil)."

The various experiments made by the writer have failed to discover a simple solvent, whereby cantharidin may be freed from the resins named. Cold petroleum benzin was found not to dissolve cantharidin or the resin of euphorbium, and to dissolve rosin only partially. Bisulphide of carbon does not dissolve cantharidin; rosin and euphorbium are but partially soluble, the latter very little, in the same solvent; chloroform and alcohol dissolve cantharidin and the two resins very readily. Cantharidin is soluble in fats, and thereby is rendered soluble to some extent in some liquids, like bisulphide of carbon.

The behavior of cantharidin to solvents renders its separation from resinous and oily substances very difficult, in fact I know of no method whereby such a separation can be effected.

Regarding the assaying of cantharides, known to be pure,

the writer has not yet found an easier and more satisfactory method than the one proposed by Fumouze some years ago; the main objection to it is the loss of chloroform and the difficulty of exhausting the cantharides, the powder of which floats upon the heavy chloroform, and exhaustion cannot therefore be attained by the process of displacement. Fumouze's method seems not to be so well adapted to the assaying of the tincture, and for reasons above stated, is entirely unsuited to assay cantharidal cerate. Regarding the tincture it was observed that the diluted alcohol dissolves one or more principles, which greatly interfere with the subsequent purification of cantharidin.

NOTES ON THE MEXICAN HONEY ANT.

(*MYRMECOCYSTUS MEXICANUS.*)

BY W. SAUNDERS, LONDON, ONTARIO, CANADA.

During the past season I have received from one of our esteemed colleagues, Mr. Jacob Krummeck, of Santa Fe, New Mexico, several packages of this most curious and interesting insect, accompanied by letters, giving fuller details of their habits, and of the uses of the honey they secrete, than have ever before been published. Very little can be found in entomological works relating to this insect. Some thirty years ago a Belgian naturalist, M. Wesmael, received this remarkable insect from a party travelling in Mexico, and published some observations on it in the fifth volume of the Bulletin of the Royal Academy of Brussels, giving it the name of Myrmecocystus Mexicanus. The discoverer found it very common near the town of Dolores, where they were known under the native name of Busileras. He states that they live in underground nests, which are not distinguishable from without. In early life none of these insects present any unusual distension of the body, but when arrived at a certain period of maturity, some individuals begin to show a distended abdomen, which after a time becomes swollen into a

comparatively immense sphere, produced by the distension of the membrane connecting the abdominal segments, this sphere or sac being filled with a sort of honey. Another class of individuals in the community, raised from the same brood of eggs, manifest no tendency of this sort, but retain the usual normal form of abdomen. Both these classes of ants are neuters. When the sacs of the honey-producers are full they are somewhat like a transparent bubble of a yellowish color. They are unable in consequence of their immense burden to leave their nests and are necessarily almost inactive, remaining fixed or suspended to the floors of the galleries of their nests elaborating this honey, which it is said they subsequently discharge into cells similar to those of the hive. It is also stated that the women and children dig them up and enjoy their honey, and that it is by no means unusual for these insects to be served at table, the head and thorax with the legs being removed, when the distended abdomens are eaten as a delicate sweetmeat. The neuter ant without the distended abdomen is the active worker in the establishment.

Our friend Krummeck informs me that they are found in considerable numbers in the mountains around Santa Fe; that the honey ants are unable to move and are fed by the active workers. He says, "I have sat by their nests and watched them working, for at one time some six or seven hours; the workers carry leaves of different plants home, to feed, as I suppose, the others that produce the honey." Mr. Krummeck has tried to procure me specimens of the plants on which this insect feeds, but has not yet succeeded. He does not think that the honey is deposited by these honey ants in cells as has been stated, but that they keep the fluid in their bodies, and the workers feed from them, and that when the honey in the sac of an individual is exhausted it dies. In reference to the uses made of this honey in New Mexico he says, that the natives make a very pleasant drink of it, which is made in the proportion of three or four drachms of the honey to six ounces of water. It has no commercial value, is not brought to market, but simply made for their own use. They use this drink among themselves in the

mountains in cases of fever, where medical attendance cannot be obtained. The honey is also used by them as a cure for eye diseases, especially for cataract.

I was very anxious to see this insect alive, and Mr. Krummeck very kindly did his best to gratify me in this particular, having twice sent me boxes of living specimens, but the unavoidable delay and knocking about attendant on so long a journey by mail, has in each case resulted in the death of all the ants before they reached me, the packages being literally soaked with the honey which had escaped from the bodies of the ants.

III. CHEMISTRY.

AMERICAN BROMINE.

BY S. S. GARRIGUES, PH.D., EAST SAGINAW, MICH.

QUERY 77.—The statistics of the American bromine production.

IN reply to the above query I have the honor to make the following report. Bromine is now manufactured on a large scale in the Ohio and Kanawha Valleys, and the aggregate production for the last year was not less than 130,000 pounds. The rate of production has been in excess of the consumption. Of the total amount of bromine produced, perhaps five-sixths is forwarded to Eastern manufacturers of bromides at Philadelphia and New York, the balance to Cincinnati and St. Louis. The principal manufacturers of bromine are John J. Juhler, successor to G. A. Hagemann, at Pomeroy, Ohio, and Messrs. Stieren & Nesbit, in West Virginia.

The quantity of bromine manufactured at any one establishment, in proportion to the salt produced by the same, is 1 pound of bromine for every 13 bushels of salt; a slight difference is noticeable in favor of the up river part of the salt strata; the depth of the wells and strength of brine increasing in the same direction.

Besides the bromine produced in the Ohio and Kanawha

Valleys, there are also made some 800 or 1000 pounds per year, in Pennsylvania, along the Monongahela and Allegheny Rivers. At these places the bromine is converted into bromide of iron, to avoid the difficulty of handling, and risk of forwarding it.

There has been only one attempt to manufacture bromine in the Saginaw Valley, and this is now abandoned, owing to the small percentage of bromine contained in the brine.

TARTARIC ACID.

BY HENRY J. ROSE.

QUERY 42.—What is the purity of commercial tartaric acid, and what is the normal percentage of water?

IN examining samples of tartaric acid to reply to this query’ I have confined myself to the products of the different manufacturers in the United States, kindly furnished me by Mr. P. W. Bedford, together with a few samples from leading drug houses. Three samples are from Canadian firms, purchased from London drug brokers, the makers being unknown; six from retail druggists; and a sample of Messrs. Pfizer's crystal and powdered, Messrs. White's powdered, and Powers & Weightman's crystal and powder.

The plan adopted was that of Professor Hoffmann, by volumetric estimation of strength; by solubility in strong alcohol; and by the action of barium nitrate, calcium sulphate, ammonium oxalate, and hydrosulphuric acid.

By the volumetric estimation all the samples were found to be of full strength, the slight difference in neutralizing power being possibly accounted for by local causes. Crystals were found 2.5 per cent. stronger than powdered samples.

The other tests indicated freedom from sulphates and oxalates in all the samples, a mere trace of calcium salts in three cases, and the presence of metallic impurities in two; that of White & Co. containing lead salt to the extent of $\frac{3}{10}$ of 1 per cent., and that of Lyman Brothers & Co., of Toronto, which gave a reddish-brown precipitate with hydrosulphuric acid,

which amounted to a smaller percentage, and which I was unable to recognize.

The normal percentage of water was found by the silver test to be from 11 to 12 per cent. A sample of the powder and crystal was placed in a vacuum glass, over sulphuric acid, for 48 hours, with a loss of only 1 per cent. in weight, and the attempt to deprive the acid of any of its water by heat was found to result in a proportionate loss in neutralizing power.

TORONTO, September 18th, 1878.

ON THE PREPARATION OF GELSEMINIA AND GELSEMINIC ACID.

BY CHARLES C. FREDIGKE.

THE following is respectfully submitted as a partial answer to Query No. 70, left for general acceptance at the session of the American Pharmaceutical Association, held in the city of Cleveland last year, and as an experiment collateral to an investigation commenced some months ago with a view to determine the proximate constituents of the root of Gelseminum sempervirens, their nature and quantity.

Gelseminic Acid.—Five hundred grammes of the root in prime condition are reduced to powder No. 50, of this one hundred grammes are put into a porcelain dish placed on a sand-bath, boiled with three litres of distilled water for one hour, and filtered boiling hot, the glass funnel for this purpose being placed in a water-bath jacket. The material is then treated again with another quantity of water in the same manner until a small test-tube filled with it, and a beam of light from a lens passed through it, shows no blue fluorescence on its passage. To attain this point twenty-one litres are required. The filtered liquors are then evaporated in a water-bath down to 200 grammes, mixed with twice the quantity of concentrated ether, and set aside for a day, occasion-

ally shaken; the mixture is then transferred to a filter, in order to separate a considerable quantity of dirty brown matter, conglomerated in floccular masses. The filtrate consists of two layers, the lower aqueous, of a reddish-brown color, acid to test-paper, the upper ethereal, of a yellow color when held against the light, but of a grass-green color when looked upon the surface, these changes being influenced by the color of surrounding objects; placing the flask on a dark surface, a beautiful deep green tint appearing, while a light surface produces a light greenish-blue. The liquors are separated by an appropriate funnel. The brown deposit on the filter is washed with cold water till it comes off colorless, added to the aqueous solution and evaporated in a water-bath to a small bulk (100 grammes), and again shaken with concentrated ether as before; the treatment with ether being repeated till a drop evaporated on a watchglass leaves no visible residue. The ethereal liquors are then mixed and allowed to evaporate spontaneously in a capsule previously tared. The yellowish crystalline body remaining is reduced in a glass mortar to a fine powder, and intimately mixed with about ten times its weight of recently purified animal charcoal, then moistened with ether, the magma well mixed and allowed to dry, again reduced to a fine powder, after which it is transferred to a flask, shaken with ether till exhausted, and the ethereal solution allowed to evaporate spontaneously, when the acid will be left in the form of crystals of a yellowish color. To purify them completely, this operation must be repeated, the yield, however, being reduced.

Thus obtained, the crystals form transparent, slender, acicular prisms, disposed in heaps when viewed with an objective of 60 diameters.

One hundred grammes yield 65 centigrammes, equal to about 1 grain in 154 or 38 grains nearly in a troy pound of the root, being about eighteen times more than what was obtained by Mr. Wormley, if we suppose each fluid ounce of the extract to represent 1 troy ounce of the root. The difference may be explained when it is borne in mind that in the preparation of fluid extracts the crude material is not always

exhausted by the solvents employed; besides, the acid is not pure, holding a small quantity of the alkaloid in combination, the latter existing in the root associated with an excess of acid, and whether the menstruum used to extract it is acidulated or not, a small amount of the base will be liberated.

It possesses the striking property to impart a blue color to an alkaline solution similar to that of an acid solution of quinia, or the tint shown by refined carbon oil and some of its derivatives, the intensity of which changes with the angle under which the rays fall upon the liquid. A trace of it, in fact an imponderable quantity of the acid, will impart this tint to a large quantity of water, and solutions so much diluted that their alkalinity eludes the common tests.

The changes of color produced by nitric acid and ammonia on gelseminic acid cannot be called characteristic, for uric acid reacts in a similar manner.

Gelseminia.—The aqueous portion left in the foregoing process is now condensed in a water-bath to one-half, shaken with twice the volume of strong alcohol (in order to get rid of a considerable quantity of gummy matter, which forms when the alkaline solution is shaken directly with chloroform and emulsion, from which the latter separates only partially even after two or three days), set aside for an hour or two and transferred to a filter, the deposit on the filter washed with alcohol, added to the filtrate, and the whole evaporated to a small bulk, made alkaline with liquor potassæ, shaken well with twice the volume of chloroform for one or two minutes, and after standing two hours, separated; this operation is repeated with fresh portions of chloroform several times in order to insure complete absorption of the alkaloid. The united chloroform solutions are evaporated in a water-bath with a gentle heat to dryness, the yellowish-brown, hard residue of impure gelseminia is redissolved in a small quantity of water acidulated with hydrochloric acid, transferred to a flask, and enough liquor potassæ added to precipitate the alkaloid (at this stage resembling somewhat a fresh curdy precipitate of chloride of silver), which may either be thrown on a filter, washed with a small quantity of distilled

water and tried, or as in the present instance, the liquid containing the precipitate may be shaken with twice its volume of concentrated ether (the treatment with ether being repeated two or three times), which dissolves the precipitate, and after being evaporated will leave the gelseminia in the shape of a brownish-yellow deposit. In order to obtain it free from color, it is necessary to redissolve in water, adding hydrochloric acid as before, &c.

It responds to all the tests usually applied, for an account of which as well as of the reactions of gelseminic acid, refer to a paper by Mr. Wormley, published in the American Journal of Pharmacy, for January, 1870.

Triturated in a mortar it forms a light brownish-yellow powder of a strong bitter taste.

Evaporated from a concentrated ethereal solution, and viewed with objectives of different powers, it forms an amorphous conglomerate, without a crystalline form.

The quantity obtained from 100 grammes weighed 49 centigrammes, less than one-half of what was expected. There was some unavoidable loss during the process.

It is easily soluble in ether, chloroform, bisulphuret of carbon, and turpentine, less in alcohol, and very sparingly in water, but dissolves freely in water acidulated with hydrochloric acid, from which it may be precipitated by an alkali. It is also precipitated from its solutions by tannic acid, biniodide of potassium, bichloride of platinum, iodohydrargyrate of potassium, and most tests for alkaloids.

In order to determine the nature of this substance in a preliminary way, Lassaigne's test for nitrogen was applied, which takes advantage of the fact, that when organic substances containing nitrogen are brought in contact with alkaline metals, cyanides are formed. The substance is heated in a dry test-tube, with double its weight of sodium or potassium, to redness; after cooling, dissolved in water, filtered, and the filtrate mixed with a few drops of an old solution of sulphate of iron (one part in nine of water), and, after shaking, supersaturated with hydrochloric acid. If nitrogen is present, a floccular precipitate of Prussian blue will take

place immediately or after standing some time. Fifteen centigrammes were treated, as above, with double the quantity of sodium; but here a foreseen, though not expected accident occurred, for when heated nearly to redness, the closed end of the test-tube flew off with something like an explosion, scattering the contents in every direction.

Gelseminia can be produced on a large scale, at a considerably lower price than some of the alkaloids mostly used, such as morphia, &c., even if no other solvents than ether or chloroform should be found. Besides, other methods may be employed, such as precipitating from an aqueous solution by some salt, decomposing the precipitate, &c.

Gelseminum sempervirens has been known for the last twenty or thirty years to possess decided therapeutical properties, and like most other remedies of this class, became known to the profession by way of empirical experience, furnishing a reason why it has not been more used. The literature on the subject is already quite respectable in amount, and it is therefore singular, that it is only three years since we knew anything definite concerning its principal constituents, their mode of easy isolation, &c. To say that it is uncertain in its action, may also be said of all the extracts and tinctures of our more important vegetable remedies, such as aconitum, belladonna, conium, lactucarium, nux vomica, helleborus, &c. They are all apt to be more or less uncertain in their effects, often entirely inert. It is only on the alkaloids or principles of vegetables that anything like reliance can be placed. That it may become a valuable agent is probable; our knowledge of its therapeutic powers is, however, only fragmentary. Physiological experiments and close clinical observation will do for this what they have done for all the other remedial agents of this class.

The symptoms by which its effects manifest themselves in the animal economy, seem to indicate that its energy is primarily exerted on the cerebro-spinal centres; and, secondarily, on the respiratory apparatus and the heart, the functions of the former ceasing before those of the latter. The motor nerves of the eye are attacked first; objects cannot be fixed,

dodging their position; the eyelids become paralyzed, drop down, and cannot be raised voluntarily; the pupils largely dilate; there is a feeling of lightness in the tongue; it ascends gradually to the roof of the mouth; pronunciation becomes slurred; then the extremities refuse to support the body, and erect motion without support becomes impossible; the pulse gradually becomes more frequent, rises to 120, 130, and more beats per minute, is small but regular; respiration then becomes labored, the mind remaining clear, however. This state will set in about an hour and a half after the ingestion of an overdose of the drug. Formidable as these symptoms appear, they are effectually counteracted by diffusive stimulants, like diluted alcohol, such as strong cognac or whisky, given in doses of two ounces or less every hour, according to circumstances. All the symptoms will disappear after about two hours, leaving no unpleasant effects, or derangement of the organism.

Before it has had time to become absorbed, tannin dissolved in water may be given as an antidote, forming an insoluble precipitate.

CHICAGO, August, 1878.

ON THE REACTION OF CHLORAL-HYDRATE.

BY JOHN M. MAISCH.

THE query referred to and accepted by me has reference to the supposed decomposition of chloral-hydrate as evidenced: 1, by the white vapors produced on nearing to it a strip of paper or glass rod moistened with ammonia; and 2, by the smell of compounds supposed to be or resembling chlorous and hypochlorous acid. Before any answer could be given, it appeared to be necessary to obtain a perfectly pure chloral-hydrate. According to Liebig, chloral even if dissolved in water has not an acid reaction, and does not precipitate a solution of silver. For the subject of the query, the latter point did not appear to be of any importance, at least not at

the outset, and it was therefore contemplated to prepare or procure a perfectly neutral chloral-hydrate, such as is directed by the Pharmacopœia Germanica, which requires of crystallized chloral-hydrate, *in aqua solutum sit reactionis nullius.* The strength of this solution in water not being given, it was decided to apply the test in two ways, namely: 1, by placing a crystal of chloral-hydrate upon moistened litmus-paper; and 2, by dipping a piece of a delicately adjusted blue litmus-paper into a saturated aqueous solution of chloral.

It is evident that no matter how carefully the litmus-paper may be prepared, there must be a limit to its being changed to red by dilute acids, either instantly or after the lapse of some time; the strongest solution and direct contact were, for this reason, selected, in order not to be misled afterwards by the appearance of white vapors, arising from approaching ammonia to the minute quantity of free muriatic or other acid supposed to be contained in such chloral-hydrate. The application of this simple test in the manner indicated may appear to be hypercritical, but the writer supposed that if a substance is really of neutral behavior to test-paper, it ought to be so in its most concentrated condition.

Recrystallization of chloral-hydrate from bisulphide of carbon, as suggested by Professor Flückiger, yields beautiful crystals; but all that the writer could obtain from different commercial samples possessed an acid reaction, even after a second recrystallization from bisulphide of carbon.

Failing in his attempts to obtain by recrystallization a chloral-hydrate of *absolutely* neutral reaction, the writer was pleased at the chance offered him by a circular dated Ludwigshafen on the Rhine, March 8th, 1873, and signed Saame & Co., of procuring an absolutely neutral chloral-hydrate. The article obtained here in May last, did not stand the test of neutrality as applied in the manner indicated. Supposing the sample might be of a lot imported before that firm succeeded in obtaining it perfectly neutral, another sample of more recent importation was obtained in August, and this likewise did not stand the test of neutrality as applied by me.

In the meantime chloral-hydrate having an acid reaction, was recrystallized from chloroform, the solution being left in contact with an alkaline carbonate, as suggested by C. Bernbeck, either dry or in concentrated aqueous solution, and frequently agitated, but after complete separation had taken place, the solution of chloral-hydrate still possessed an acid reaction, from which the crystallizing hydrate was not free.

Dr. Hager has stated that some samples of Saame & Co.'s chloral-hydrate had their acid reaction masked by the addition of an alkaline carbonate. However that may be, the two samples of their chloral-hydrate examined by me were free from any fixed residue.

It was now attempted to get rid of the acid reaction in another and simpler way, easier at least for experimental purposes. Accordingly granular chloral-hydrate of an acid reaction was inclosed in a vial together with some uneffloresced carbonate of ammonium. After having been in contact for several days, the atmosphere in the vial was found to be of a strong alkaline reaction, and it was taken for granted that all the free acid that might have been contained in the chloral-hydrate would have surely been neutralized. The lump of carbonate of ammonium was removed, a portion of the chloral-hydrate spread upon paper to allow the excess of carbonate of ammonium to evaporate, while other portions were recrystallized from bisulphide of carbon and chloroform, and then tested in the manner indicated above; the different portions had an acid reaction. In short, all the methods that suggested themselves to the writer, failed to produce an *absolutely* neutral chloral-hydrate, the acid reaction being plainly and almost instantly visible if a saturated aqueous solution of it was diluted with five times its bulk of water. The chlorals used for these experiments were De Haen's, Schering's, and Saame's, all three of German manufacture.

The results of his experiments, imperfect as they may be, have convinced the writer that Liebig was wrong in his statement of the neutral reaction of chloral in aqueous solution, and that Schering is correct in his communication to

Buchner's N. Repertorium, June, 1873, p. 369, when he says: "According to our experiments made some years ago and again repeated now (in consequence of the laudation of Saame's product), chloral-hydrate has always a faint acid reaction, no matter how carefully the purification may have been performed, or how the process may have been altered."

During the experiments, which were made during the cool weather of last spring, and the hot season of July and August, the writer could not fail to notice a considerable difference in the appearance of white vapors on opening bottles containing chloral-hydrate. Without having made any critical experiments on this subject, he thinks, however, from his casual observations, to be justified in stating that the intensity of these vapors, even in the absence of ammonia, is mainly due to two important factors, namely, heat and moisture; that is to say, it appears to the writer, that a low temperature and a dry atmosphere will almost entirely prevent the appearance of these vapors on opening the bottles, while a higher temperature and a moist condition of the atmosphere favor their appearance. In both extreme cases, however, the intensity of these vapors will be obviously increased on approaching the bottle with a glass rod moistened with ammonia.

The experiments sketched above have altogether changed the writer's opinion in regard to the cause of these vapors. While heretofore he relied upon the supposed neutral reaction of chloral-hydrate, as indicated by high authorities, and upon the production of white vapors with ammonia as indicative of the presence of free volatile, in the case under consideration most probably muriatic acid, he is now convinced that the heretofore supposed reliable tests are entirely out of place in the case of chloral-hydrate; moreover, until experiments performed by more competent persons, having greater experience with this remedial agent, shall have established the contrary, he is compelled to believe that pure chloral-hydrate has a slight acid reaction, which, however, becomes instantly evident to delicate test-paper if applied to it in substance or in saturated aqueous solution.

It deserves to be mentioned in this connection, that the writer has in his possession a sample of chloral-hydrate which he attempted, some years ago, to recrystallize from alcohol, using a chloral not completely hydrated. On applying the crystals or a concentrated solution to moist litmus-paper, the latter is reddened *only after some time.* Whether this is due simply to the presence of some chloral-alcoholate, by the latter being more soluble in water and thus retarding the reaction of the hydrate, he is not prepared to say; but he is now disposed to look upon chloral-hydrate having a neutral or a slowly developed acid reaction under the circumstances mentioned, as either containing an admixture of an alkaline carbonate or of chloral-alcoholate.

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College of Physicians,	"	"
Pennsylvania Hospital,	"	"
Academy of Natural Sciences,	"	"
American Philosophical Society,	"	"
Philadelphia Library,	"	"
Mercantile Library,	"	"
American Journal of Medical Sciences,	"	"
Dental Cosmos,	"	"
Maryland College of Pharmacy,	Baltimore,	Maryland.
University of Maryland,	"	"
Smithsonian Institution,	Washington,	Dist. Columbia.

Congressional Library,	Washington,	Dist. Columbia.
Surgeon-General, U. S. Army,	"	"
National College of Pharmacy,	"	"
Richmond Pharmaceutical Association,	Richmond,	Virginia.
Med. Soc. of Virginia, L. B. Edwards, M.D., Sec.,	"	"
Louisville College of Pharmacy,	Louisville,	Kentucky.
Cincinnati College of Pharmacy,	Cincinnati,	Ohio.
" Academy of Medicine,	"	"
Longview Lunatic Asylum,	"	"
Detroit Review of Medicine and Pharmacy,	Detroit,	Michigan.
Medical Association of the State of Arkansas, Dr. J. H. Lenow, Secretary,	Little Rock,	Arkansas.
Tennessee College of Pharmacy,	Nashville,	Tennessee.
University of Michigan,	Ann Arbor,	Michigan.
Chicago College of Pharmacy,	Chicago,	Illinois.
Minnesota State Medical Society, Charles E. Smith, M.D., Secretary,	St. Paul,	Minnesota.
St. Louis College of Pharmacy,	St. Louis,	Missouri.
" Academy of Science,	"	"
" Mercantile Library,	"	"
" Public School Library,	"	"
Kansas College of Pharmacy,	Leavenworth,	Kansas.
Nebraska Medical Society, S. D. Mercer, M.D., Secretary,	Omaha,	Nebraska.
California Pharmaceutical Society,	San Francisco,	California.
Pacific Medical and Surgical Journal,	"	"
Western Lancet,	"	"
Montreal Chemists' Association,	Montreal,	Canada.
Canadian Pharmaceutical Society,	Toronto,	"

British Pharmaceutical Conference, Dr. J. Attfield, London.
Pharmaceutical Society of Great Britain.
Pharmaceutical Journal and Transactions, London.
Chemical News, London.
Chemist and Druggist, London.
Journal of Applied Science, London.
British Museum, London.
Philosophical Society, Glasgow.
Liverpool Chemists' Association.
Pharmaceutical Society at Edinburgh.
Academie Royale de Médecine, Bruxelles.
Société de Pharmacie Royale de Bruxelles.
Société de Pharmacie d'Anvers, Fr. Vaudelt, Sécrétaire.
Société de Pharmacie, M. Henri Buignet, Sécrétaire, Paris.
Academie des Sciences, Paris.
Journal de Pharmacie et de Chimie, Paris.
Répertoire de Pharmacy, Paris.
Schweizer Apotheker-Verein, Mr. R. Lindt, President, Bern.

Oesterreichischer Apotheker-Verein, Wien.
Oesterreichische Zeitschrift für Pharmacie, Wien.
K. K. Gesellschaft der Aerzte, Dr. Hauke, Secretary, Wien.
K. K. Akademie der Wissenschaften, Wien.
K. Bayer, " " München.
Neues Repertorium für Pharmacie, Prof. Buchner, München.
University of Strassburg.
Deutscher Apotheker-Verein, Dr. Schacht, Berlin.
Archiv der Pharmacie, Waisenhausbuchhandlung, Halle.
Chemisches Centralblatt, Dr. Rud. Arendt, Leipzig.
Jahresbericht über die Fortschritte der Chemie, &c., J. Ricker'sche Buchhandlung, Giessen.
Jahresbericht für Pharmacognosie, Pharmacie und Toxicologie, Prof. Dr. Wiggers, Göttingen.
Prof. Dr. Wöhler, Göttingen.
K. Akademie der Wissenschaften, Göttingen.
" " Berlin.
Pharmaceutische Central-Halle, Dr. H. Hager, Pulvermühle bei Fürstenberg.
Pharmaceutische Zeitung, Bunzlau.
Pharmaceutische Gesellschaft in St. Petersburg, St. Petersburg.
Pharmaceutische Zeitschrift für Russland, St. Petersburg.
Pharmaceutisches Institut, Dorpat, Russia.
Pharmaceutical Institution, Stockholm, Sweden.
Kongelige Norske Universitet i Christiania.

LIST OF PUBLICATIONS RECEIVED,

For the American Pharmaceutical Association.

Societies and editors are respectfully requested to forward all publications intended for the American Pharmaceutical Association to the Permanent Secretary. European exchanges, if not sent by mail, will reach us through the Smithsonian Institution at Washington, or through Messrs. B. Westermann & Co., or E. Steiger, booksellers, New York.

JOHN M. MAISCH,
145 North Tenth Street, Philadelphia, Pa.

American Journal of Medical Sciences, Philadelphia, 1873.
Medical News and Library, Philadelphia, 1873.
Dental Cosmos, Philadelphia, 1873.
Transactions of the College of Physicians of Philadelphia, 1872.
Journal of Applied Chemistry. New York and Philadelphia, 1873.
The Pharmacist, Chicago, 1873.
Pacific Medical and Surgical Journal, San Francisco, 1873.
The Canadian Pharmaceutical Journal. Edited by E. B. Shuttleworth, 1873.
Pharmaceutical Journal and Transactions, London, 1872, August to September, 1873.
The Chemist and Druggist, London, 1873, Nos. 1 to 12.
Bulletin de la Société Royale de Pharmacie de Bruxelles, 1873.
Neues Jahrbuch für Pharmacie, Speyer, 1873.
Wittstein's Vierteljahresschrift, München, 1873.
Buchner's Neues Repertorium, München, 1873.
Nachrichten von der K. Gesellschaft der Wissenschaften, &c. Göttingen, 1872.
Pharmaceutische Centralhalle, Berlin, 1873.
Archiv der Pharmacie, Halle, 1873.
Zeitschrift des allgemeinen oesterreichischen Apotheker-Vereines. Wien, 1873.
Anzeiger der K. Academie der Wissenschaften. Wien, 1873.
Pharmaceutische Zeitschrift für Russland. St. Petersburg, 1872, Nos. 14 to 26; 1873, No. 1 to 17.
Transactions of the Minnesota State Medical Society, Minneapolis, 1872 and 1873.
Proceedings of the Nebraska State Medical Society at its Fifth Annual Session, Omaha, 1873.
Proceedings of the Medical Association of the State of Arkansas, Fourth Annual Session, Little Rock, 1873.

Fifty-fifth Annual Report of the Trustees of the New York State Library, Albany, 1878.

Medical and Surgical History of the War of Rebellion, 2 Vols. Washington, D. C.

Report of the Columbia Hospital for Women, and Lying-in Hospital, Washington.

Cooley's Handbook of Compound Medicines. Philadelphia: J. B. Lippincott & Co.

Cooley's Handbook of Perfumes, Cosmetics, and other Toilet Articles. Philadelphia: J. B. Lippincott & Co.

The Pharmacopœia of the United States of America.

AUTHORIZED AGENTS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Nominated by the Treasurer and Permanent Secretary, and approved by the President, to carry out the resolution passed at the fifth session of the 18th Annual Meeting.

California,	James G. Steele, 521 Montgomery St.,	San Francisco.
Dist. of Columbia,	Joseph W. Nairn, 901 Pennsylvania Av.,	Washington.
Delaware,	Linton Smith, M.D., 7th & Market Sts.,	Wilmington.
Illinois,	Henry W. Fuller, 24 Market St.,	Chicago.
Kansas,	Robert J. Brown, Fifth & Shawnee Sts.,	Leavenworth.
Kentucky,	C. Lewis Diehl, First & Walnut Sts.,	Louisville.
Louisiana,	John H. Pope, Jackson & Prytania Sts.,	New Orleans.
Maryland,	J. Faris Moore, Howard & Madison Sts.,	Baltimore.
Massachusetts,	Henry W. Lincoln, Charles & Chestnut, Sts.,	Boston.
Michigan,	William Johnson, 158 Jefferson Av.,	Detroit.
Missouri,	William H. Crawford, 732 Washington Av.,	St. Louis.
New Jersey,	Charles B. Smith, 831 Broad St.,	Newark.
New York,	Daniel C. Robbins, 91 Fulton St.,	New York.
	George C. Close, Smith & Schermerhorn,	Brooklyn.
Ohio,	Jacob D. Wells, 4th St. & Central Av.,	Cincinnati.
Pennsylvania,	Rich'd M. Shoemaker, Fourth & Race Sts.,	Philadelphia.
	Alfred J. Rankin, 45 Sixth St.,	Pittsburg.
Tennessee,	Henry C. Steever, 2d & Madison Sts.,	Memphis.
Virginia,	T. Roberts Baker, Main Street,	Richmond.

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN PHARMACEUTICAL ASSOCIATION.

CONSTITUTION.

ARTICLE I. This Association shall be called the "American Pharmaceutical Association." Its aim shall be to unite the educated and reputable Pharmaceutists and Druggists of the United States in the following objects:

1. To improve and regulate the drug market, by preventing the importation of inferior, adulterated, or deteriorated drugs, and by detecting and exposing home adulteration.

2. To encourage proper relations between Druggists, Pharmaceutists, Physicians, and the people at large, which shall promote the public welfare, and tend to mutual strength and advantage.

3. To improve the science and the art of Pharmacy by diffusing scientific knowledge among Apothecaries and Druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4. To regulate the system of apprenticeship and employment, so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing, and selling medicines.

5. To suppress empiricism, and to restrict the dispensing and sale of medicines to regularly educated Druggists and Apothecaries.

6. To uphold standards of authority in the Education, Theory, and Practice of Pharmacy.

7. To create and maintain a standard of professional honesty equal to the amount of our professional knowledge, with a view to the highest good and greatest protection to the public.

ARTICLE II. This Association shall consist of active, life, and honorary members, and shall hold its meetings annually.

Article III. The officers of the Association shall be a President, three Vice-Presidents, a Permanent Secretary, a Local Secretary, a Treasurer, and a Reporter on the Progress of Pharmacy, all of whom, with the exception of the Permanent Secretary, shall be elected annually, and shall hold office until an election of successors.

Article IV. All moneys received from life membership, together with such funds as may be bequeathed, or otherwise donated to the Association, shall be invested by the Treasurer in United States Government or State securities, the annual interest of which only shall be used by the Association for its current expenses.

Article V. Every proposition to alter or amend this Constitution shall be submitted in writing, and may be balloted for at the next Annual Meeting; when, upon receiving the votes of three-fourths of the members present, it shall become a part of this Constitution.

BY-LAWS.

CHAPTER I.

Of the President and Vice-Presidents.

Article I. The President shall preside at all meetings of the Association; in his absence or inability, one of the Vice-Presidents, or in the absence of all, a President pro tempore shall perform the duties of President.

Article II. In the absence of the Permanent Secretary, the President shall appoint a Recording Secretary pro tempore.

Article III. In meetings the President shall take the chair at the proper time; announce all business; receive all proper motions, resolutions, reports, and communications, and order the vote upon all proper questions at the proper time.

Article IV. In all ballotings, and on questions upon which the yeas and nays are taken, the President is required to vote, but his name should be called last; in other cases he shall not vote, unless the members be equally divided, or unless his vote, if given to the minority, will make the decision equal, and in case of such equal division the motion is lost.

Article V. He shall enforce order and decorum; it is his duty to hear all that is spoken in debate, and in case of personality or impropriety he shall promptly call the speaker to order. He shall decide all questions of order, subject to the right of appeal, unless in cases where he prefers to submit the matter to the meeting; decide promptly who is to speak when two or more members rise at the same moment; and be careful to see that business is brought forward in proper order.

Article VI. He shall have the right to call a member to the chair, in order that he may take the floor, in debate. He shall see that the Constitution and By-Laws are properly enforced.

ARTICLE VII. He shall appoint all committees, unless provided for in the By-Laws, or otherwise directed by the Association.

ARTICLE VIII. He shall sign the certificates of membership, and countersign all orders on the Treasurer. He shall obey the instructions of the Association, and authenticate by his signature, when necessary, its proceedings.

ARTICLE IX. He shall present at each annual meeting an address, embodying general scientific facts and events of the year, or discuss such scientific questions as may to him seem suitable to the occasion.

CHAPTER II.

Of the Permanent Secretary.

ARTICLE I. The Permanent Secretary shall be elected to hold office permanently, during the pleasure of the Association. He shall receive from the Treasurer an annual salary of $500, and the amount of his expenses incident to the meeting in addition to his salary.

ARTICLE II. He shall preserve fair and correct minutes of the proceedings of the meetings, and carefully preserve, on file, all reports, essays, and papers of every description received by the Association, and shall be charged with the necessary foreign and scientific correspondence, and with editing, publishing, and distributing the Proceedings of the Association, under the direction of the Executive Committee.

ARTICLE III. He shall read all papers handed him by the President for that purpose; shall call and record the yeas and nays whenever they are required to be called; shall notify the chairman of every special committee of his appointment, giving him a list of his colleagues, and stating the business upon which the committee is to act; and shall notify every member of the time and place of each annual meeting.

ARTICLE IV. He shall be, ex-officio, a member of the Executive Committee.

CHAPTER III.

Of the Local Secretary.

ARTICLE I. The Local Secretary shall be elected annually, near the close of the Annual Meeting, and shall reside at or near the place where the next Annual Meeting of the Association is to be held.

ARTICLE II. He shall assist the Permanent Secretary in his duties; shall co-operate with any local committee in making arrangements for the Annual Meeting; shall correspond with the chairmen of the several committees, and with other members, in advance of the meeting, for the promotion of its objects, and shall have the custody of specimens, papers, and apparatus destined for use or exhibition at the meetings.

CHAPTER IV.

Of the Treasurer.

ARTICLE I. The Treasurer shall collect and take charge of the funds of the Association, and shall hold, sign, and issue the certificates of membership.

ARTICLE II. He shall pay no money except on the order of the Secretary, countersigned by the President and accompanied by the proper vouchers.

ARTICLE III. He shall report to the Executive Committee, previous to each Annual Meeting, the names of such members as have failed to pay their annual contributions for three years, and also the names of such as have failed to return their certificates of membership after having been officially disconnected with the Association, and having been duly notified to return them.

ARTICLE IV. He shall present a statement of his accounts at each Annual Meeting, that they may be audited; he shall receive an annual salary of $300, and the amount of his expenses incident to the meeting in addition to his salary.

CHAPTER V.

Of the Reporter on the Progress of Pharmacy.

ARTICLE I. The Reporter on the Progress of Pharmacy shall be elected annually, and shall receive from the Treasurer for his services such sum as may be annually determined upon.

ARTICLE II. All journals and volumes received in exchange for the Proceedings by the Permanent Secretary, and such other journals as shall be deemed necessary, shall be sent to him by that officer for use in the compilation of his report; for all of which he shall be held responsible until returned to the Permanent Secretary for preservation.

ARTICLE III. From these and other available sources he shall prepare a comprehensive report on the improvements and discoveries in Pharmacy, Chemistry, and Materia Medica, and the collateral branches of knowledge; on the changes in condition of Pharmaceutical Institutions, together with such statistical, biographical, and obituary notices as will furnish an epitome of the progress and changes in the science and practice of Pharmacy, and of its votaries at home and abroad.

ARTICLE IV. The report on the Progress of Pharmacy shall commence with July 1st of the preceding year, and end with June 30th of the year in which it is submitted, shall be written in a form fitted for the printer, and shall be presented complete at the annual meeting.

ARTICLE V. In case of the illness or other inability of the Reporter to carry on the work of the report, the Permanent Secretary and the Chairman of the Executive Committee shall be required to make the best arrangements they can command, to continue the work to its completion.

CHAPTER VI.

Of Committees.

ARTICLE I. There shall be elected annually four standing committees: An Executive Committee, and a Committee on the Drug Market, each to consist of five members; a Committee on Papers and Queries, and a Business Committee, each to consist of three members.

ARTICLE II. The Executive Committee, of which the Permanent Secretary shall be a member, shall have charge of the revision of the Roll, the investigation of application for membership, and the publication of the Proceedings.

ARTICLE III. They shall report at each meeting a revised roll of members, with appropriate notices of deceased members, and the names of any who, having become disconnected with the Association, refuse to return their certificates of membership as provided by the By-Laws.

ARTICLE IV. They shall furnish to each member of the Association not in arrears one copy of the annual publication of the Proceedings, which publication shall contain the correct roll of members, full minutes of the several sittings, the Report of the President and of the Committees, together with such addresses, scientific papers, discussions, notices of new processes, and preparations, as the Executive Committee may deem worthy of insertion, and shall fix the price at which the Proceedings shall be sold.

ARTICLE V. The Committee on the Drug Market shall report annually the condition of the Drug Market, the fluctuations in the supply and demand of drugs and chemicals, the variations in quality, and the adulterations and sophistications coming under their observation or reported to them by others, with any suggestions or recommendations for the improvement or better regulation of the trade; and they shall be authorized to report upon any adulterations and sophistications of immediate interest, through the Pharmaceutical Journals, as soon as practicable after their discovery.

ARTICLE VI. The Committee on Papers and Queries shall receive all Reports of Standing Committees, and all papers for the Association. They shall designate which of them shall be read at length, or which by title, and shall be furnished with a synopsis of each by the authors. They shall, in connection with the Business Committee, arrange the time which may be most appropriate or convenient for reading them.

ARTICLE VII. The Committee on Papers and Queries shall report, near the close of each Annual Meeting, a proper number of questions of scientific and practical interest, the answers to which may advance the interests of Pharmacy, and shall procure the acceptance of as many such questions for investigation as may be practicable.

ARTICLE VIII. Any person writing a paper for the Association must, to insure its publication in the Proceedings, refer the same with a synopsis of its contents to the Committee on Papers and Queries previous to the third session.

Article IX. It shall be the duty of every Standing Committee making a report annually to the Association, in like manner to furnish a copy of the same, together with a synopsis of its contents, to the Committee on Papers and Queries before the first annual session of the Association.

Article X. The Business Committee shall be charged with the transmission of unfinished business from one Annual Meeting to another, and with collecting, arranging, and expediting the business during the sessions of the Annual Meetings.

CHAPTER VII.

Of Membership.

Article I. Every pharmaceutist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of Pharmacy, Chemistry, and Botany, who may be specially interested in Pharmacy and Materia Medica, who, after duly considering the objects of the Association and the obligations of its Constitution and By-Laws, are willing to subscribe to them, are eligible to membership.

Article II. Any person eligible to membership may make application in writing, with the indorsement of any two members of the Association in good standing, to any member of the Executive Committee, who shall report his application to the said Committee.

If after investigating his claims they shall approve his election, they shall, at the earliest time practicable, report his name to the Association, and he may be elected by two-thirds of the members present on ballot.

Article III. No person shall be a member of this Association, nor shall his name be placed upon the roll, until he shall have signed the Constitution and paid into the Treasury the sum of *Five Dollars* as an initiation fee, and the annual contribution for the current year, with the exception of *Delegates* as provided in Article VI of this chapter.

Article IV. Every member shall pay in advance to the Treasurer the sum of *Five Dollars* as his yearly contribution, and is liable to lose his membership by neglecting to pay said contribution for *three successive years*.

Article V. Any member who shall pay to the Treasurer the sum of *Seventy-five dollars at one time*, shall become a life member and shall be exempt from all future annual contributions.

Article VI. All local organizations of Pharmacists shall be entitled to *five* delegates, as their representatives in the Annual Meetings, who, *if present*, become members of the Association on signing the Constitution and paying the annual contribution for the current year, without paying the usual initiation fee.

Article VII. Members shall be entitled on the payment of *Five Dollars* to receive a certificate of membership signed by the President, one Vice-

President, Permanent Secretary, and Treasurer, at the same time covenanting to return the same to the proper officer on relinquishing their connection with the Association.

ARTICLE VIII. Persons constitutionally elected to membership become permanent members, and their membership can cease only by resignation, non-payment of dues, or by expulsion, as provided in these By-Laws.

ARTICLE IX. Resignation of membership shall be made in writing to the Permanent Secretary or Treasurer, but no resignation shall be accepted from any one who is in arrears to the Treasury.

All resignations shall be acknowledged in writing by the officer who receives them, and shall be reported at the next Annual Meeting.

ARTICLE X. Any member may be expelled for improper conduct or the violation of the Constitution, By-Laws, or Ethics adopted by the Association, but no person shall be expelled unless he shall receive for expulsion two-thirds of all the votes cast at some regular session.

ARTICLE XI. Pharmaceutists, chemists, and other scientific men, who may be thought worthy the distinction, may be elected honorary members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office, or vote at the meetings.

CHAPTER VIII.

Of Meetings.

ARTICLE I. The meetings shall be held annually; provided, that in case of failure of this from any cause the duty of calling the Association together shall devolve upon the President or one of the Vice-Presidents, with the advice and consent of the Executive Committee.

ARTICLE II. The order of business at the first session of each Annual Meeting shall be as follows:

Section 1. Promptly, at the time named in the notice issued for the meeting, the President, or in his absence one of the Vice-Presidents, or in their absence a President pro tempore, shall officiate.

Section 2. In the absence of the Permanent Secretary the President shall appoint a Recording Secretary pro tempore, who shall perform the duties of the Permanent Secretary until his arrival.

Section 3. Nineteen members shall constitute a quorum for the transaction of business.

Section 4. The President shall appoint a committee of three persons to examine the credentials of delegates, which committee shall attend to that duty, and report to the Association as soon as practicable, when the Secretary shall call the roll, noting the names of the delegates and members in attendance.

Section 5. The Executive Committee shall present names recommended

for membership, when the President, having ascertained that a quorum of members is present, shall order an election by ballot, and appoint two tellers.

Section 6. Reports of committees shall be presented, read by their titles, the synopsis, or in full, and laid on the table for future consideration.

Section 7. The President shall call the roll of Colleges and Associations represented, requesting each delegation in turn to appoint one member, the persons so selected to act as a committee to nominate officers for the ensuing year; in addition to which he shall appoint five members, who are not delegates, to act with the committee.

Section 8. The reports of the Executive Committee, of the Permanent Secretary, and of the Treasurer, shall be read by title or in full.

Section 9. A committee of five shall be appointed to examine and report upon specimens exhibited.

Section 10. Incidental business may be called up by the Business Committee.

Section 11. The first session shall close with the reading of the President's Annual Report, and the reference of any portions of it requiring action, to an appropriate committee.

ARTICLE III. The order of business at the second session of each Annual Meeting shall be as follows:

Section 1. The President shall call the Association to order.

Section 2. The Secretary shall read the minutes of the preceding meeting, which may be amended if necessary, and shall then be approved.

Section 3. The Report of the Committee on Nomination shall be read; when the President shall appoint tellers, and the Officers and Committees nominated shall be balloted for.

Section 4. The officers elected shall take their respective places.

Section 5. The Executive Committee shall present names recommended for membership, when a ballot shall be ordered for their election.

Section 6. Reports of Standing Committees shall be read.

Section 7. Reports of Special Committees shall be read.

Section 8. The second session shall close with the examination of specimens on exhibition.

ARTICLE IV. The order of business at subsequent sessions shall be determined by the Business Committee, with the consent of the Association.

CHAPTER IX.

Of Rules of Order and Debate.

ARTICLE I. The ordinary rules of parliamentary bodies shall be enforced by the presiding officer, from whose decision, however, appeals may be taken, if required by two members, and the meeting shall thereupon decide without debate.

ARTICLE II. When a question is regularly before the meeting and under discussion, no motion shall be received but to adjourn, to lay on the table, for the previous question, to postpone to a certain day, to commit or amend, to postpone indefinitely; which several motions have precedence in the order in which they are arranged. A motion to adjourn shall be decided without debate.

ARTICLE III. No member may speak twice on the same subject, except by permission, until every member wishing to speak has spoken.

ARTICLE IV. On the call of any two members, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the minutes.

CHAPTER X.

Miscellaneous.

ARTICLE I. In all such points of order as are not noticed in these By-Laws, the Association shall be governed by the established usages in all assemblies governed by parliamentary rules.

ARTICLE II. Every proposition to alter or amend these By-Laws shall be submitted in writing, and may be balloted for at any subsequent session, when, upon receiving the votes of three-fourths of the members present, it shall become a part of the By-Laws.

ARTICLE III. No one or more of these By-Laws shall be suspended.

FORM OF APPLICATION FOR MEMBERSHIP.

APPROVING of the objects of the American Pharmaceutical Association, I am desirous of joining it in membership; and having read its Constitution and By-laws, I hereby signify my approval of the same, and subscribe to them.

____

Address, ____

I hereby agree to return my certificate of membership in the American Pharmaceutical Association to the Treasurer of that body, if I shall hereafter cease to be connected in membership with it.

____

TESTIMONIALS.

The undersigned, members in good standing, being personally acquainted with   of   testify to his moral character, his skill as a practical Druggist and Pharmaceutist, and his professional probity and good standing, and they recommend him for membership in the American Pharmaceutical Association.

NAME.   ADDRESS.

ROLL OF MEMBERS.

HONORARY MEMBERS.

UNITED STATES OF AMERICA.

Montgomery J. Bailey, M.D.,	New York,	New York,	1856
Daniel B. Smith,	Philadelphia,	Penna.,	1856
George B. Wood, M.D.,	"	"	1857

FOREIGN COUNTRIES.

AUSTRIA.

Anton von Waldheim, *Vienna*, 1871.

BELGIUM.

A. T. De Meyer, *Brussels*, 1868.
Norbert Gille, *Brussels*, 1868.

ENGLAND.

Dr. John Attfield, *London*, 1871.
Henry B. Brady, *Newcastle-on-Tyne*, 1871.
Dr. J. Redwood, *London*, 1871.
Henry Deane, *London*, 1868.
Daniel Hanbury, *London*, 1868.
Dr. Robert Bentley, *London*, 1872.

FRANCE.

Dr. A. Chevalier, *Paris*, 1871.
Dr. J. Léon Soubeiran, *Paris*, 1871.
Dr. Augustin A. Délondre, *Sèvres*, 1871.
Stanislas Martin, *Paris*, 1872.

GERMANY.

Dr. Adolph Duflos, *Breslau*, 1871.
Dr. Frederick Mohr, *Bonn*, 1868.
Dr. G. C. Wittstein, *Munich*, 1868.
Dr. Hermann Hager, *Pulvermühle near Fürstenberg*, 1868.
Dr. F. A. Flückiger, *Strasburg*, 1868.

NETHERLANDS.

Dr. J. E. De Vrij, *Hague*, 1871.

RUSSIA.

Dr. G. Dragendorff, *Dorpat*, 1868.

ACTIVE MEMBERS.

☞ Members are requested to notify the Secretary and Treasurer of all changes of address.

(THE NAMES OF LIFE MEMBERS IN SMALL CAPITALS.)

UNITED STATES OF AMERICA.

ALABAMA.

Mobile.

Brown, Charles Scott, . . 1873
Candidus, Philip Charles, . 1857
Mohr, Charles, ... 1871
Primo, Manuel, . . . 1868

Selma.

Carrel, Alexander S., . . . 1871
McVoy, James L., . . . 1871
Wilkins, John D., . . . 1871

ARKANSAS.

Hot Springs.

Rockafellow, C. N., . . . 1873

Little Rock.

Beidelman, John Wilmer, . 1871
McAlmont, John J., M.D., . 1871
Naulty, William H., . . 1870

CALIFORNIA.

San Francisco.

Calvert, John, ... 1870
Geary, William, . . . 1870
Greatrex, Thomas J., . . 1869
McKay, George J., . . . 1864
Moffit, John W., . . . 1870
Moffitt, Thomas S., . . . 1861
Painter, Emlen, . . . 1870
Simpson, William, . . . 1870
Steele, Henry, ... 1859
Steele, James G., . . . 1859
Wenzell, William T., . . 1870

Hayward.

Richards, Edward J., . . 1870

Mare Island.

Anderson, Joseph E., . . 1869

Marysville, Yuba Co.

Flint, John Henry, . . . 1873

Petaluma.

Maynard, Frederick T., . . 1864

Vallejo, Solano Co.

Frost, James, ... 1870
Topley, James, ... 1869

Visalia, Tulare Co.

Blake, James W., . . . 1869

COLORADO.

Central City.

Best, John, ... 1866

COLUMBIA, DISTRICT OF.

Washington.

Baldus, William T., . . . 1872
Bannvart, Charles A., . . 1856
Benson, Henry G., . . . 1872
Bury, Edward Berkley, . . 1870
Cristiani, Theodore, . . . 1873
Cromwell, Zachariah William, 1870
Ferguson, Robert Benedict, . 1867
Gaither, Francis Singleton, . 1860
Heller, P. H., ... 1871
Hickling, Dan. Percy, Phar.D., 1867
Howard, George M., . . 1871
Kidwell, John Lawrence, . 1856
Milburn, John Alexander, . 1858
Murray, Talbot Chambers, . 1868
Nairn, Joseph Wilson, . . 1858
O'Donnell, James Dominic, . 1870
Rothrock, Weller, . . . 1869
Sayre, Charles Le Roy, . . 1869
Simms, Giles Green Craycroft, 1860
Thompson, William S., . . 1871
Tyson, Samuel Ellicott, M.D., . 1857

CONNECTICUT.

Hartford.

Lambe, John J., ... 1868

Litchfield.

Gates, Howard E., ... 1878

Middletown.

Pitt, John R., Jr., ... 1872

New Haven.

Chapin, Harlow, ... 1871
Daggett, Alfred, Jr., . . . 1865
Daggett, Henry, ... 1871
Kelsey, Henry, Jr., ... 1878

Stamford.

Haight, William B., . . . 1872
Morrison, Samuel C., . . . 1871

Waterbury.

Dikeman, Nathan, ... 1865
Munson, L. J., ... 1872

West Winstead.

Phelps, Dwight, ... 1878

Windsor Locks.

Holden, Henry Clay, . . . 1870

DELAWARE.

Wilmington.

Day, Charles W., ... 1878
McInall, Edward, Jr., . . . 1867
Shoemaker, Benjamin, . . . 1867
Simms, John H., M.D., . . . 1867
Smith, Linton, M.D., . . . 1870

New Castle.

Ferris, Charles E., M.D., . . 1867

FLORIDA.

Fort George.

Rollins, John Francis, . . . 1859

GEORGIA.

Atlanta.

Daniels, John B., ... 1871
Peacock, Frederick S., . . . 1871
Schumann, Theodore, . . . 1860

Augusta.

Land, Robert H., ... 1859

Macon.

Huddart, John P., ... 1870
Hunt, Leonard W., . . . 1871
Zeilin, John Henry, . . . 1859

Milledgeville.

Clark, John M., ... 1857
Grieve, Fleming G., . . . 1859
Cotting, William A., . . . 1869

Rome.

Fenner, William R., . . . 1871

ILLINOIS.

Aurora.

Howell, C. C., ... 1871

Belleville.

Baker, Nathan T., ... 1871
Steingoetter, Henry, . . . 1871

Bloomington.

Dyson, Dunbar S., ... 1856
Jones, Charles S., ... 1869

Bradford, Stark Co.

Plummer, David G., . . . 1869

Chicago.

Bartlett, N. Gray, ... 1864
Biroth, Henry, ... 1865
Bliss, Sylvester S., ... 1865
Blocki, William F., . . . 1863
Borcherdt, Julius C., . . . 1867
Brown, Thomas, ... 1865
Bryan, Alexander B., . . . 1865
Bryan, Frederick A., . . . 1865
Buck, George, ... 1860
Curth, Nicholaus T., . . . 1865
Ebert, Albert E., ... 1864
Ehrman, John W., ... 1867
Fredigke, Charles Christian, . 1869
Fuller, Henry W., ... 1865
Fuller, Oliver F., ... 1869
Gale, Edwin O., ... 1857
Gale, William H., ... 1857
Garrison, Herod Dailey, . . 1869
Hambright, George M., . . 1865
Hanning, John T., ... 1864

Heuermann, Henry W., . . . 1869
Heylman, Charles, . . . 1865
Hirsh, Joseph, ... 1869
Hooper, John H., . . . 1865
Jacobus, Judson S., . . . 1870
Jamieson, Thomas N., . . 1869
Jauncey, William, . . . 1873
Mahla, Frederick, Ph.D., . 1864
McPherson, George, . . 1865
Mead, Nehemiah, . . . 1865
Mill, James W., . . . 1864
Milleman, Philip L., . . 1866
Murray, Allen F., . . . 1869
Paine, James D., . . . 1857
Palmer, Hosea W., . . . 1870
Parsons, John, ... 1865
Patterson, Theodore H., . . 1869
Reinhold, William, . . . 1866
Sargent, Ezekiel H., . . 1864
Schroeder, Nobel, . . . 1866
Sharp, J. Perine, . . . 1865
Smith, Albert A., . . . 1869
Strehl, Louis C., . . . 1866
Sweet, Henry, ... 1865
Vanderburgh, Abram C., . 1869
Whitfield, Thomas, . . . 1865
Willard, Joseph, . . . 1865
Wilson, Julius H., . . . 1869
Woltersdorf, Louis, . . . 1865

Englewood, Cook Co.

Peirpoint, Newton, . . . 1869

Galesburg.

Clark, Albert B., Jr., . . 1868
Devendorf, Almond Smith, . 1872
Johnson, Newton A., . . 1869

Highland.

Mueller, Adolphus, . . . 1871

Livingston.

Gallagher, James, . . . 1865

Peoria.

Breed, Marvin A., . . . 1866
Colburn, Walter, . . . 1869
Miles, Benjamin Franklin, M.D., 1869
Singer, Peter J., . . . 1869

Quincy.

Schroeder, Hermann, . 1871

INDIANA.

Evansville.

Lilly, James E., . . . 1872

Fort Wayne.

Van Sweringen, Hiram, . . 1865

Indianapolis.

Bristol, A. J., ... 1871
Dryer, James W., . . . 1871
Miller, Edward T., . . . 1859
Schrader, Henry, . . . 1869
Sloan, George W., . . . 1857

Kendallville.

Lohman, George H., . . 1872

La Porte.

West, Frederick, . . . 1866

New Albany.

Scribner, Benjamin Franklin, . 1858

Terre Haute.

Davis, Charles A., . . . 1871

IOWA.

Burlington.

Matthews, Charles C., . . 1869

Davenport.

Ballard, John W., . . . 1871

Des Moines.

Cary, Edward R., . . . 1871

Fort Madison.

Schaefer, George H., . . 1871

Guttenberg, Clayton Co.

Vogel, Richard, . . . 1867

Le Mars, Plymouth Co.

Bennett, Charles H., . . 1869

Washington.

Cook, William A., . . . 1871
Ink, Parker P., . . . 1872

KANSAS.

Fort Scott.

Connor, Lucius E., ... 1869
Ingalls, Albert O., ... 1869

Junction City.

Porter, Edward T., ... 1867

Lawrence.

Hunt, Nathan W., ... 1869
Leis, George, ... 1869
Merkel, Louis J., ... 1871

Leavenworth.

Brown, Robert J., ... 1862
Harrop, Joseph W., . . . 1869
Parham, Robert, ... 1868
Pettit, Henry M., ... 1860

Olathe.

Marshall, John B., ... 1871

Poala, Miami Co.

Price, Joseph Warren, . . . 1869

KENTUCKY.

Catlettsburg.

Patton, William Allison,. . . 1873

Covington.

Nodler, Peter, ... 1870

Louisville.

Carey, George H., ... 1866
Colgan, John, ... 1867
Diehl, Conrad Lewis, . . . 1863
Hughes, Henry A., ... 1857
Jenkins, Thomas E., M.D., . 1866
Jones, Simon N., ... 1870
Kern, Flora, Jr., ... 1868
Newman, George A., . . . 1866
Pfingst, Ferdinand J., . . . 1867
Sacksteder, Francis,. . . . 1867
Scheffer, Emil,. 1872
Strassel, William, ... 1870
Sutton, Ellsworth S., . . . 1871
Sutton, Peter P., ... 1871
Wilder, Graham, ... 1868

LOUISIANA.

New Orleans.

Gamotis, A., ... 1872
Keaton, M. E. F., ... 1871
Keffer, William P.,. . . . 1866
Parker, Charles G., ... 1870
Pope, John H., ... 1860

Bayou Goula.

Viallon, Paul L., ... 1870

New Iberia.

Lee, James A., ... 1856

Plaquemine.

Delavallade, J. M., ... 1878

Thibodeaux.

Thibodeaux, Joseph G., . . 1870

MAINE.

Augusta.

Partridge, Charles K., . . . 1867

Bangor.

Harlow, Noah Sparhawk, . . 1859
Patten, John P., ... 1871

Eastport.

Shead, Edward E., ... 1866

Lewiston.

Cook, John G., ... 1859

Portland.

Cummings, Henry T., M.D., . 1853
Hay, Henry H., ... 1867
Jorden, William H., . . . 1871
Phillips, Walter F., . . . 1859

MARYLAND.

Baltimore.

Adams, Charles S., ... 1873
Andrews, George W., Phar.D., 1856
Baxley, J. Brown, Phar.D., . 1856
Beam, Isaac R., ... 1873
Brown, Alexander E., . . . 1868
Brown, William H., . . . 1863

Burrough, Edward Ewalt,	1869
Burrough, Horace,	1869
Caspari, William,	1856
Dannattel, George F.,	1867
Dohme, Charles E.,	1863
Dohme, Lewis,	1859
Donavin, Matthew W.,	1867
Duke, Augustin Whitfield,	1870
Elliott, Henry A.,	1859
Emich, Columbus V.,	1863
Frames, James P.,	1868
German, John W.,	1870
Gossman, Adam J.,	1870
Hancock, John Francis,	1863
Hancock, John Henry,	1870
Hassencamp, Ferdinand,	1872
Jefferson, John H. B.,	1868
Jennings, N. Hynson,	1857
Kirby, Thomas E., M.D.,	1863
Kleinschmidt, A. A.,	1873
Lauer, Michael J.,	1865
Lautenbach, Robert, M.D.,	1870
Lilly, Alonzo, Jr.,	1863
Marion, Alfred N.,	1872
Mittnach, Henry,	1873
Monsarrat, Oscar,	1856
Moore, J. Faris, M.D., Phar.D.,	1856
Morrison, S. Ellwood,	1863
Muth, John P.,	1864
Osburn, William H.,	1870
Perkins, Elisha H.,	1857
Potts, Jesse Newport,	1870
Roberts, Joseph, Phar.D.,	1856
Russell, Eugene J.,	1856
Russell, E. Walton, Phar.D.,	1863
Sappington, Richard, M.D.,	1870
Sharp, Alpheus P.,	1855
Sheets, James Addison,	1870
Skinner, Joseph G.,	1864
Smith, Edward A.,	1870
Smith, J. Jacob,	1856
Suding, Henry A.,	1870
Sylvester, Samuel Retallack,	1858
Tilyard, Charles L.,	1867
Thompson, William S.,	1856
Thompson, Wilbur F.,	1870
Thomsen, John J.,	1856
Webb, John A.,	1870
Winkleman, John H.,	1864

Annapolis.

Button, Elijah,	1870
Street, Daniel B.,	1867

Cumberland.

Campbell, John H. B.,	1870

Hagerstown.

Winter, Jonas,	1863

Rockville, Montgomery Co.

Owens, A. Francis,	1873

MASSACHUSETTS.

Boston.

Atwood, Charles H.,	1856
Babo, Leopold,	1859
Bassett, Charles Harrison,	1867
Blossom, William A.,	1871
Boyden, Ashel,	1853
Brown, Joseph Taylor,	1859
Brown, Joseph Taylor, Jr.,	1869
Brown, William,	1858
Burnett, Joseph,	1852
Burnham, George H.,	1871
Campbell, Isaac T.,	1859
Canning, Henry,	1865
Carter, Solomon,	1865
Colcord, Samuel M.,	1852
Colton, James B.,	1865
Connor, Thomas J.,	1867
Cutler, Edward Waldo,	1859
Doliber, Thomas,	1859
Doolittle, Erastus Hubbard,	1865
Drury, Linus Dana,	1871
Eaton, Charles I.,	1867
French, George Washington,	1865
Fowle, Henry D.,	1853
Gleeson, James A.,	1859
Gleeson, Michael H.,	1859
Hazeltine, Charles Benjamin R.,	1867
Henchman, Daniel,	1853
Hoagland, Pratt R.,	1868
Hollis, Thomas,	1853
Horton, William Francis,	1869

Jenkins, Luther L., . . . 1867
Kelly, Edward Samuel, . . 1871
Kent, Robert R., . . . 1855
Kidder, Darius B., . . . 1858
Leary, John Thomas, . . 1869
Lincoln, Henry Ware, . . 1853
Littlefield, Alvah, . . . 1856
Lowd, John Colby, . . . 1871
Markoe, George Frederick H., 1863
Melvin, James S., . . . 1853
Metcalf, Theodore, . . . 1857
Nowell, William F., . . 1867
Parker, Joseph L., . . . 1864
Patch, Edgar Leonard, . . 1872
Patten, Ichabod Bartlett, . 1858
Perry, Edward H., . . . 1865
Restieaux, Thomas, . . . 1853
Ricker, George D., . . . 1858
Sheppard, Samuel A. D., . . 1865
Smalley, Elijah, . . . 1860
Talbot, James S., . . . 1873
Tappan, Charles Eldridge, . 1871
Tompkins, Orlando, . . . 1859
Tower, Levi, Jr., . . . 1860
Turner, T. Larkin, . . . 1853
Underwood, Charles G., . . 1865
Whall, Joseph S., . . . 1873
Wiley, Abraham S., . . 1857
Wilkins, Daniel G., . . . 1865
Wilson, Benjamin O., . . 1859
Woodbridge, Geo. Washington, 1859

Brookline.

Bird, George W., . . . 1867

Cambridge.

Hubbard, John H., . . . 1866
James, Thomas P., . . . 1857

Cambridgeport.

Arnold, George K., . . . 1871
Bayley, Augustus R., . . 1859
Orne, Joel S., ... 1859
Richardson, James H., . . 1868
Thayer, Henry, . . . 1858

Charlestown.

Dodge, Levi G., . . . 1859
Kettell, George P., . . . 1867
Stacey, Benjamin Franklin, . 1860
Warfield, Abijah Baker, . . 1870

Chelsea.

Buck, John, ... 1855

East Abington.

Estes, Joseph Josselyn, . . 1870

Fall River.

Redfearn, John, . . . 1873

Great Barrington.

Whiting, Frederick T., . . 1868

Hingham.

Hunt, James L., . . . 1865

Holyoke.

Wild, Joseph O., . . . 1873

Hudson.

Safford, William Augustus, . 1865

Lawrence.

Whitney, Henry M., . . 1859

Lee.

Noyes, D. N., ... 1873

Lowell.

Bailey, Frederick, . . . 1869
Hood, Charles I., . . . 1871
Kidder, Samuel, Jr., . . 1859

Lynn.

Proctor, Benjamin, . . . 1859

Maynard.

Wouldhave, Thomas, . . 1871

Middleboro.

Drake, Charles W., . . . 1873

New Bedford.

Blake, James E., . . . 1866
Hadley, Frank R., . . . 1872
Lawton, Charles H., . . 1873
Lawton, Horace A., . . 1873

Newburyport.

Goodwin, William W., . . 1853
Smith, Samuel A., . . . 1859

North Adams.

McDonald, William, . . 1873
Pettis, Newton C., . . . 1868

North Andover.

Berrian, George W., Jr., . 1857

Rockport.

Blatchford, Eben, . . . 1857
Blatchford, Eben, Jr., . . 1865

Salem.

Emerton, James, . . . 1859

Sheffield.

Bidwell, Marshall Spring, . 1871

Southbridge.

Holt, Alvin E., . . . 1873

Springfield.

Bigelow, Edmund, . . . 1860
Masters, T. Edward, . . 1873
Preston, Alfred J., . . . 1873
Webber, J. G., . . . 1873
Wilson, Howard E., . . 1873

Wakefield.

Melzar, Augustus P., . . 1856

Worcester.

Bright, James Evesson, . . 1868
McConville, Michael S., . . 1859
McConville, Thomas A., . . 1864
Scott, David, ... 1855
Scott, Nelson R., . . . 1859

MICHIGAN.

Almont.

Richardson, Daniel W., . . 1866

Ann Arbor.

Douglass, Samuel H., M.D., . 1869
Eberbach, Ottmar, . . . 1869
Prescott, Albert B., M.D., . 1871

Battle Creek.

Wardell, Robert C., . . . 1860

Bay City.

Aldridge, George, . . . 1872
Street, Job F., ... 1869

Chelsea.

Glazier, George P., . . . 1868

Detroit.

Chapman, Joseph R., . . 1869
Duffield, Samuel P., Ph.D., . 1859
Fletcher, Francis E., . . 1866
Griffith, John H., . . . 1866
Johnston, William, . . . 1860
Ronnefeld, Theodore, . . 1866
Vernon, James, . . . 1866

East Saginaw.

Dunk, Alfred A., . . . 1867
Garrigues, Samuel S., Ph.D., . 1855
Melchers, Henry, . . . 1869
Simoneau, Leander, . . . 1869

Jackson.

Meseroll, James C., . . . 1867
Weeks, Eugene J., . . . 1866

Kalamazoo.

MacDonald, George, . . 1871

Monroe.

Weiss, Julius, ... 1866

Muskegon.

Wagener, Samuel H., . . 1869

Pentwater.

Jesson, Jacob, ... 1872

Saginaw City.

Keeler, William H., . . 1872
Moll, William, ... 1869

Schoolcraft.

James, George R., . . . 1869

MINNESOTA.

Duluth.

Eyster, C. Edward., . . . 1871

Mankato.

Austin, George W., . . . 1865

Minneapolis.

Savory, George Augustus, . 1869

St. Paul.

Stein, Gottlieb, ... 1871
Sweeney, Robert Ormsby, . 1866

St. Peter.

Reigart, John Musser, . . 1871

MISSISSIPPI.

Columbus.

Osborne, Hampden, . . . 1869

Jackson.

Ash, Matthew F., . . . 1856
Buck, John T., ... 1868

MISSOURI.

St. Louis.

Alexander, Maurice W., . . 1871
Bang, Charles, ... 1871
Blake, Amos R., . . . 1871
Blank, Alois, ... 1871
Blickhahn, George F., M.D., . 1871
Boehm, Solomon, . . . 1871
Bugge, Andreas Valdemar, . 1868
Catlin, Ephron, . . . 1871
Catlin, Theron, . . . 1871
Chamberlain, Guilford T., . 1853
Chase, Charles D., . . . 1872
Connor, James F., . . . 1871
Crawford, William Harper, . 1864
Crawley, Francis Xavier, . 1869
Curtman, Charles O., M.D., . 1871
D'Amour, Otto, . . . 1871
Fischer, C. F. Adolph, . . 1871
Glenn, Thomas Smith, . . 1870
Good, James M., . . . 1871
Grandjean, Charles, . . . 1871
Grandjean, Eugene, . . . 1871
Graus, William R., . . . 1871
Guerdan, John, . . . 1871
Hollister, Arthur P., . . 1871
Jones, Charles Kendall, . . 1867
Jones, George H., . . . 1869
Kalb, Theodore, . . . 1864
Kirkbride, Joseph Cooper, . 1869
Kovacs, Martin, ... 1871
Krebs, Hugo, ... 1871
Leitch, Arthur, ... 1860
Maddock, William L., . . 1871
Mallinckrodt, Gustavus, . . 1869
Mallinckrodt, Edward, . . 1869
McBride, James, ... 1864
Meyer, Christian F. G., . . 1860
O'Gallagher, James, M.D., . 1858
Physick, Henry Sanford, . 1870
Primm, Hubert, ... 1855
Randals, Evermont, . . . 1865
Richardson, J. Clifford, . . 1871
Sander, Enno, Ph.D., . . 1858
Scheffer, Henry W., . . 1868
Scholz, Philip, ... 1871
Sennewald, Ferdinand William, 1865
Steer, Justin, ... 1869
Tanton, Thomas, ... 1865
Ude, George, ... 1871
Witte, L. Edward, . . . 1871

Chillicothe.

Boyce, S. F., ... 1871

Hannibal.

Orynski, L., ... 1871

Kansas City.

Baker, E. F., ... 1871
Brackett, Aurick S., . . . 1868
Breunert, Augustus, . . . 1868
French, Paul F., ... 1871
Lyon, George P., ... 1871
Mann, Albert H., ... 1869
Schultz, Frederick William, . 1871

Macon.

Field, Amos, ... 1871

Mexico, Adrian Co.

Llewellyn, John Frederick, . 1867

St. Charles.

Allison, James W., . . . 1871

Trenton, Grundy Co.

Fetherston'h, Edward R., . 1871

Weston.

Parr, John C., ... 1856

NEBRASKA.

Omaha.

Goodman, Charles F., . . . 1871

NEVADA.

Aurora.

Baldwin, Charles Edgar, . . 1871
Green, Alexander Alfred, . 1868

NEW HAMPSHIRE.

Concord.

Morgan, James, ... 1859

Dover.

Tufts, Charles Augustus, M.D., 1856

Exeter.

Merrill, Charles A., ... 1858

Keene.

Appleton, George J., . . . 1873
Dort, Oliver Gilman, . . . 1858

Manchester.

Littlefield, Chauncey B., . . 1868

New Market.

Dearborn, George L., . . . 1853

Portsmouth.

Thacher, Joseph Haven, . . 1859
Whipple, Napoleon Dana, . 1871

Somersworth.

Jones, Charles Mortimer, . 1869
Moore, George, ... 1859

NEW JERSEY.

Bordentown.

Hankins, Bunting, ... 1865

Burlington.

Allinson, William J., . . . 1862
Vandegrift, John A., . . . 1867

Camden.

Brown, Albert P., ... 1870
De la Cour, Joseph L., . . 1870
Test, Alfred W., ... 1870

Elizabeth.

Barnaby, Thomas J., . . . 1870

Elizabethport.

Frohwein, Richard, ... 1867

Englewood.

Morris, P. H., ... 1871

Hoboken.

Fehr, Julius, ... 1870

Jersey City.

Abernethy, Maxwell, . . . 1865
Carman, George E., ... 1872
Covell, Thomas Jefferson, . 1864
Gardner, Robert W., . . . 1872
Kirsten, Adolph, ... 1867
Laird, William R., ... 1867
Mercein, James R., ... 1865
Phillips, George W. C., . . 1871
Roberts, Morris, ... 1872
Sherman, Oliver G., M.D., . 1869
White, George H., ... 1868

Madison.

Muchmore, William Fletcher, 1868

Moorestown.

Worthington, J. Willits, . 1873

Morristown.

Dalrymple, Charles H., . . 1860
McCarty, William, ... 1873
Voorhees, William S., . . 1868

Mount Holly.

White, Aaron Smith, . . . 1860

Newark.

BADGER, CHARLES W., . . 1870
Dreher, Ernest, ... 1869
Goecke, Augustus, ... 1867
Havenstein, Alexander, . . 1870
Holzhauer, Charles, . . . 1873
Jacques, Isaac W., ... 1869

Kelley, Edward F., ... 1870
Lee, John B., ... 1870
Littell, William M., . . 1870
Nichols, Edward Payson, M.D., 1870
Peters, Alexander C., . . 1868
Smith, Charles B., . . . 1868
Vandervoord, Ransford Wells, 1870
Van Gieson, Theron W., . . 1869
Van Winkle, Abraham, . . 1871

New Brunswick.

Rust, William, ... 1870

Plainfield.

Voorhees, William H., . . 1868

South Amboy.

Greene, J. H., ... 1872
Jacques, George W., . . 1869

Trenton.

Rickey, Randal, ... 1870

NEW MEXICO.

Sante Fé.

Krummeck, Jacob, ... 1867

NEW YORK.

New York City.

Aspinwall, James S., . . 1855
Atwood, Hermon W., . . 1878
Balluff, Paul, ... 1860
Bedford, Peter Wendover, . 1859
Billings, Henry M., . . . 1869
Brewer, William A., . . 1853
Carle, John, Jr., ... 1860
Cassebeer, Henry A., . . 1858
Cassebeer, Henry A , Jr., . 1872
Chandler, Charles F., Ph.D., . 1867
Coddington, Isaac, . . . 1855
Cole, Theodore, ... 1873
Creuse, Jules L. A., . . . 1871
Currie, John H., ... 1858
Davis, Benjamin, ... 1869
Day, Walter De Forest, M.D., 1878
Dege, George F., ... 1868
Ditman, Andrew J., . . 1868
De la Vergne, George W., . 1857
Dung, Albert C., ... 1872
Dunn, Adolph G., ... 1862
Eimer, Charles, ... 1872
Faber, John, ... 1857
Fisher, William, ... 1862
Fraser, Edward A., ... 1878
Frey, John, ... 1865
Fougera, Edmund C., . . 1867
Frohwein, Max, ... 1865
Frohwein, Theobald, . . 1862
Gardiner, Warren B., . . 1860
Gill, George, M.D., . . . 1872
Gilmore, John W., . . . 1867
Gellatly, William A., . . 1858
Green, Thomas T., . . . 1858
Gridley, Junius, ... 1853
Hale, Frederick, ... 1855
Harner, James M., . . . 1867
Hartnett, Eugene, . . . 1878
Haviland, Henry, ... 1857
Hays, David, ... 1867
Hebberling, Gottfried, . . 1867
Hegeman, William, . . . 1858
Higgins, James S., . . . 1862
Hoffmann, Frederick, Ph.D., . 1867
Hohenthal, Charles F. L., . 1865
Hudnut, Alexander, . . . 1857
Imhof, Henry, ... 1872
Johnson, Edward L., . . 1860
Jones, Frederick S., . . . 1872
Kiersted, Henry T., . . . 1856
Kimmel, Henry, ... 1867
Krehbiel, Gustavus, . . . 1865
Kuhles, Philip, ... 1878
Lazell, Lewis T., ... 1858
Lehlbach, Paul Frederick, . 1872
Macmahan, Thomas Jackson, . 1871
Main, Thomas F., ... 1872
Marsh, Edward H., . . . 1858
McElhenie, Thomas D., . . 1872
McIntyre, Ewen, ... 1878
McKesson, John, Jr., . . 1867
Menninger, Henry J., M.D., . 1866
Milhau, Edward L., . . . 1858
Milhau, John, ... 1855
Molwitz, Ernest, ... 1867
Neergaard, William, . . 1859
Neustadt, Otto, ... 1878

Nietsch, A. J. W.,	1872
Osmun, Charles A.,	1868
Peixotto, Moses L. M.,	1869
Pfingsten, Gustavus,	1873
Porter, George G.,	1860
Ramsperger, Gustavus,	1860
Raser, William H.,	1869
Reichard, F. Alfred,	1871
Reinold, Bernard H.,	1861
Rice, Charles,	1870
Robbins, Daniel C.,	1862
Royce, Lucien M.,*	1866
Sands, Robert A.,	1858
Sands, George G.,	1867
Schofield, James L.,	1867
Shedden, John W.,	1859
Sheils, George E.,	1860
Skelley, James T.,	1866
Southwick, George W.,	1860
Starr, Thomas,	1870
Weaver, James,	1860
Weinman, Oscar C.,	1873
Weismann, Augustus W.,	1869
Wenck, George J.,	1869
Westerfield, Joseph H.,	1858
Wheeler, Lucian F.,	1858
White, Philip A.,	1872
Wickham, William Hull,	1870
Wright, William, Jr.,	1859

Brooklyn.

Althans, Charles A.,	1873
Barnaby, James Otis,	1870
Bassett, Francis M.,	1860
Chadwick, A.,	1872
Close, George C.,	1858
Connor, Thomas J.,	1867
Curtiss, Charles Grenville,	1866
Day, Carlos E.,	1870
Dunn, John A.,	1867
Dupuy, Eugene,	1852
Fulton, J. C. P.,	1873
Goodman, Bernard,	1867
Heydenreich, Emil,	1867
Heydenreich, F. Victor,	1860
Jones, Thomas,	1868
Kitchen, Charles W.,	1865
Lewis, Thomas,	1867
Livingstone, B. V. B.,	1872
Newman, George A.,	1865
Niebrugge, John H.,	1861
Ollif, James H.,	1867
Owens, Richard J.,	1860
Peduzzi, George S.,	1861
Pyle, Cyrus,	1859
Snyder, Ambrose C.,	1867
Squibb, Edward R., M.D.,	1858
Tartiss, Alfred J.,	1867
Vincent, William,	1870
Wynn, William,	1867

Albany.

Cutler, John N.,	1870
McMurdy, Robert S., M.D.,	1861

Angola, Erie Co.

Oatman, Le Roy S.,	1872

Buffalo.

Peabody, William H.,	1857
Rano, Charles O.,	1866
Tibbs, William H.,	1871

Elmira.

Morse, Henry C.,	1868

Fishkill, on Hudson.

Moith, Augustus Theodore,	1860

Flushing.

Contant, James L.,	1868
Hepburn, John,	1873

Gloversville.

Searles, William C.,	1872

Greenpoint.

Tapken, Theodore,	1868

Lockport.

Ruete, Theodore W.,	1870

Luzerne, Warren Co.

Miller, George Y.,	1872

Middletown.

King, James T.,	1859
Rogers, William H.,	1869

* Name changed from Rice to Royce.

New Lebanon.

Tilden, Henry A., . . . 1858

Plattsburgh.

Cady, Hiram Walworth, . . 1870

Port Jervis.

Cook, George E., . . . 1872

Potsdam.

Thatcher, Hervey D., . . 1865

Poughkeepsie.

Sherwood, Hezekiah S., . . 1870

Rochester.

Haas, George Hermann, . . 1872
Lane, Alfred S., . . . 1857

Rondout.

Laycock, Washington, . . 1857

Sag Harbor.

Lobstein, J. F. Daniel, . . 1868

Saratoga Springs.

Fish, Charles F., . . . 1866
Fish, George H., . . . 1869
Lamberton, J. F., . . . 1872
Mingay, James, . . . 1873

Syracuse.

Cheney, Judson Rollin, . . 1868

Tarrytown, Westchester Co.

Alsdorf, John, ... 1872

West New Brighton, S. I.

McRae, William H., . . 1861

West Farms.

Webb, Henry E., . . . 1865

Yonkers.

Stephens, William G., . . 1860
Toplis, Robert J., . . . 1863

NORTH CAROLINA.

Chapel Hill.

Saunders, Richard B., . . 1858

Raleigh.

Lee, Addison Sherwin, . . 1873
Simpson, William, . . . 1873

Washington.

Gallagher, Charles K., . . 1857

OHIO.

Cincinnati.

Adderly, William H., . . 1854
Archibald, Henry C., . . 1867
Arons, William C., . . . 1854
Ayers, James M., . . . 1872
Berghausen, Edward, . . 1864
Callender, George E., . . 1873
Chapman, William B., . . 1852
Eger, George, ... 1864
Feemster, Joseph H., . . 1873
Fennel, Adolphus, . . . 1864
Foertmyer, Adolphus W., . 1864
Fratz, John G., . . . 1864
Gordon, Oliver F., . . . 1857
Gordon, William J. M., . . 1854
Greve, Theodore L. A., . . 1864
Heineman, Otto, . . . 1864
Helman, Charles M., . . 1864
Henkel, Augustus, . . . 1865
Hill, Alfred C., . . . 1864
Hill, Hiram H., . . . 1864
Hottendorf, Augustus, . . 1864
Judge, John F., . . . 1866
Karrmann, William, . . 1864
Keeshan, John, . . . 1864
Lloyd, John Uri, . . . 1870
Markward, James, . . . 1864
Merrell, William S., . . 1854
Odena, Frederick M., . . 1866
Reinlein, Paul, . . . 1856
Reum, Hermann F., . . 1864
Scott, John, ... 1854
Tully, Andrew J., . . . 1862
Wayne, Edward S., . . . 1854
Wells, Jacob David, . . 1864
Yorston, Matthew M., . . 1864

Alliance.

Barr, Peter H., . . . 1867

Ashland.

Foltz, William K., . . . 1872

Bryan.

Snyder, Alva L., M.D., . . 1873

Canton.

Geiger, Conrad John, . . 1866
Geiger, Walter P., . . . 1867

Circleville.

Fickardt, George H., . . 1864

Cleveland.

Bock, August W., . . . 1872
Gaylord, Henry C., . . . 1869
Hartness, William H., . . 1872
Hensch, Hugo, ... 1872
Huling, Bruce, ... 1872
Mayell, Alfred, . . . 1872
Moore, James Penn, . . 1872
Myers, Daniel, ... 1872
Scott, William J., . . . 1872
Spenzer, Peter J., . . . 1872
Vaupel, Charles P., . . . 1872

Columbus.

Huston, Charles, . . . 1872
Matt, Joseph, ... 1872
Ritson, Alfred, . . . 1870
Roberts, John S., . . . 1872

Dayton.

Crawford, John S., . . . 1868
Dietrich, Jacob W., . . 1856

Dresden.

Dorsey, Thomas B., . . . 1866

Elyria.

Hill, Frank P., . . . 1872

Logan.

Harrington, Frank, . . . 1869

Navarre.

Garver, Alexander, . . . 1866
Grossklaus, John F., . . 1859

Salem, Columbiana Co.

Hawkins, M. Smith, . . 1870

Shreve.

Bertolett, William J., . . 1872

South Charlestown.

Allen, Alexander B., . . 1869

Springfield.

Casper, Thomas J., M.D., . 1867
Hensel, Samuel T., . . . 1872
Ludlow Charles, . . . 1872

Toledo.

Daniels, Thomas, . . . 1866
Hohly, C., ... 1872

Utica.

Boyd, Abraham, . . . 1869

Wooster.

Ohliger, Lewis P., . . . 1871

Youngstown.

Neal, Leander, . . . 1858

OREGON.

Portland.

Hodge, Charles, . . . 1859

PENNSYLVANIA.

Philadelphia.

Abell, Walter B., . . . 1867
Angney, John R., . . . 1867
Bakes, William C., . . . 1864
Bauer, Louis G., M.D., . . 1867
Blair, Andrew, . . . 1865
Blair, Henry C., . . . 1868
Blinkhorn, George, . . . 1860
Boring, Edwin McC., . . 1867
Bossler, David J., . . . 1873
Bower, Henry, ... 1860
Bower, Henry A., . . . 1868
Bullock, Charles, . . . 1857
Bunting, Samuel S., . . 1857
Burk, William B., . . . 1873
Caldwell, James Marshall, . 1866
Campbell, Samuel, . . . 1864
Carpenter, George W., . . 1873
Chapman, Samuel, M.D., . 1857
Chipman, Edward D., . . 1872

Coombe, Thomas R.,	1860
Cramer, Henry,	1867
Dobbins, Edward T.,	1867
Eberle, Charles L.,	1865
Eddy, Henry C.,	1869
Eldridge, George W.,	1865
Ellis, Charles,	1852
Ellis, Evan T.,	1857
England, Robert,	1868
Erben, John S.,	1868
Evans, William, Jr.,	1860
Fox, Daniel S.,	1872
Fox, Peter P.,	1869
Gerhard, Samuel,	1873
Grahame, Israel J., Phar.D.,	1856
Grove, John E.,	1868
Haenchen, Charles Eugene,	1865
Hance, Edward H.,	1857
Hancock, Charles West,	1868
Hassard, Peter J.,	1853
Hazard, Thomas H.,	1870
Heintzelman, Joseph A.,	1858
Hubbell, Orange Scott,	1857
Hurst, John C.,	1868
Jefferson, Charles L.,	1869
Jenks, William J.,	1858
Johnson, Benjamin F.,	1859
Jones, Daniel S.,	1859
Jones, Edward C.,	1864
Jones, Samuel T.,	1867
Kay, Isaac W.,	1870
Keasbey, H. G.,	1873
Keeney, Caleb R.,	1868
Keys, Roger,	1868
Koch, Louis,	1872
Krause, William,	1870
Lancaster, Thomas A.,	1859
Lippincott, Henry B.,	1868
Maisch, John M., Phar.D.,	1856
Mason, Frederick E.,	1871
Matos, Louis A.,	1872
Mattison, Richard V.,	1873
McCollin, Samuel Mason,	1864
McIntyre William,	1868
Mellor, Alfred,	1864
Miller, Adolphus W., M.D.,	1868
Milligan, Decatur,	1867
Moore, Joachim Bonaparte,	1860
Needles, Caleb H.,	1868
Parrish, Clemmons,	1868
Parrish Dillwyn,	1857
Peck, Henry T.,	1868
Perot, T. Morris,	1857
Pile, Wilson H., M.D.,	1857
Platzer, Robert,	1865
Power, Frederick B.,	1872
Preston, David,	1868
Reed, Philemon S.,	1870
Remington, Joseph P.,	1867
Riley, Charles W.,	1868
Rittenhouse, Henry N.,	1857
Robbins, Alonzo,	1865
Roche, Edward Manning,	1868
Roche, William Ford,	1868
Rosengarten, Mitchell G.,	1869
Scattergood, George J.,	1860
Seeger, Roland,	1868
Selfridge, Matthew M.,	1858
Shivers, Charles,	1860
Shinn, James T.,	1860
Shoemaker, George Y.,	1862
Shoemaker, Joseph L.,	1867
Shoemaker, Richard M.,	1869
Shryock, Allen,	1868
Smith, Isaac W.,	1867
Snowdon, George M.,	1857
Souder, Joseph A.,	1870
Taylor, Alfred B.,	1852
Thompson, William B.,	1858
Tilge, Frederick A.,	1868
Trinder, William,	1870
Troth, Samuel F.,	1857
Van Orsdel, William E.,	1868
Vogelbach, Hermann A.,	1868
Warner, William R.,	1857
Weaver, J. Thornton,	1868
Webb, William H., M.D.,	1867
Weber, William,	1872
Weidemann, Charles A.,	1868
Wendel, Henry Edward,	1873
Wiegand, Thomas S.,	1857
Wilder, Hans M.,	1866
Wilson, Adam H.,	1859
Wright, Archibald W.,	1868

Allegheny City.

Ahl, C. L., ... 1872
Brill, William H., ... 1872
Davis, David, Jr., ... 1872
Eggers, Frederick H., . . . 1872
Lutz, Harrison S., ... 1872
Neely, Joseph F., ... 1872

Bellefonte.

Green, Francis P., ... 1864

Bethlehem.

Borhek, James T., Jr., . . . 1867
Eggert, Charles H., ... 1857
Luckenback, Edward H., . . 1870
Meyers, Edward T., ... 1867
Rau, Eugene A., ... 1870

Chambersburg.

Cressler, Charles H., . . . 1868
Heyser, William, Jr., . . . 1856

Columbia.

Meyers, James A., ... 1867

Danville.

Von Nieda, John W., . . . 1868
Williams, William N., . . . 1878

Easton.

Weaver, John A., ... 1878

Erie.

Nick, Hermann Charles, . . . 1869
Nick, William Frederick, Jr., . 1869

Harrisburg.

Egle, William H., M.D., . . 1870
George, Charles T., ... 1873
Miller, J. A., M.D., ... 1878

Lancaster.

Heinitsh, Charles A., . . . 1857
Hubley, Alfred A., ... 1870

Hazleton, Luzerne Co.,

Delker, Frederick J., . . . 1868

Lebanon.

Lemberger, Joseph L., . . . 1858

Mansfield, Allegheny Co.

Christy, Robert, ... 1871

Meadville.

Sorensen, Sophus, ... 1872

New Castle.

Cubbison, James M., . . . 1873

Oil City.

Griffith, Albert R., ... 1870

Pittsburg.

Abel, Joseph, ... 1864
Caldwell, Joseph F., . . . 1872
Cherry, James B., ... 1868
Hostetter, Charles M., . . . 1870
Mattern, John C., ... 1860
Ottinger, Franklin, ... 1871
Rankin, Alfred J., ... 1864

Pottstown.

Cunningham, John M., . . . 1867

Pottsville.

Kennedy, George W., . . . 1869
Latham, Edward, ... 1871

Quakertown.

Penrose, Stephen F., . . . 1871

Reading.

Raser, John B., ... 1872
Stein, Jacob H., ... 1869
Ziegler, Philip Milton, . . . 1867

Towanda.

Porter, Henry C., ... 1869

Wilkesbarre.

Holmes, Clay W., ... 1873
Tener, Richard, Jr., ... 1868

Williamsport.

Cornell, E. A., ... 1873
Duble, Jesse Balderston, . . . 1870

York.

Smith, William, ... 1873

RHODE ISLAND.

East Greenwich.

Congdon, Albert J., . . . 1860

Newport.

Blackman, Lyman R., . . . 1865

Providence.

Calder, Albert L., . . . 1859
Davidson, Frank A., . . . 1878

Westerly.

Lattimer, Robert F., . . . 1857

SOUTH CAROLINA.

Charleston.

Luhn, Gustavus J., . . . 1873

Columbia.

Silliman, Lewis T., . . . 1859

TENNESSEE.

Bolivar.

Larwill, Joseph H., Jr., . . 1858

Knoxville.

Albers, George W., . . . 1872

Memphis.

Bennet, William R., . . . 1871
Carson, Edwin J., . . . 1871
Hampson, Hugh H., . . . 1869
Hoerner, Theodore, . . . 1871
Johnston, Charles P., . . . 1868
Robinson, James S., . . . 1869
Steel, Frank L., . . . 1870
Steever, Henry C., . . . 1865
Uhl, Charles F., . . . 1866

Nashville.

Ewing, William G., . . . 1872
Laurent, Eugene L., . . . 1872
Lillard, Benjamin, . . . 1869
Wharton, J. C., . . . 1872

UTAH.

Salt Lake City.

Perkins, William Alexander, . 1869

VERMONT.

Brandon.

Crossman, George A., . . . 1872

Rutland.

Higgins, Albert H., . . . 1870
Lewis, Elam C., . . . 1870

Springfield.

Warren, C. H., . . . 1872

VIRGINIA.

Alexandria.

Lunt, Samuel H., . . . 1878
Stabler, Richard H., M.D., . 1856

Danville.

Jones, Pleasant R., . . . 1878

Fredericksburg.

Hall, Marshall C., . . . 1870

Harrisonburg.

Avis, James L., . . . 1873

Norfolk.

Burrow, John W., . . . 1878
Masi, Frederick H., . . . 1878
Smith, John W., . . . 1878
Taylor, William A. S., . . 1878

Petersburg, Va.

Goodwyn, John W., . . . 1878

Richmond.

Anthony, Joseph, . . . 1878
Baker, Thomas Roberts, . . 1878
Blumt, Ira W., . . . 1878
Bodeker, Henry, . . . 1878
Conrad, William A. S., . . 1878
Dove, John Edwin, . . . 1878
Dupuy, Powhatan E., . . . 1878
Farrar, Samuel Wesley, . . 1878
Fischer, H. Emil, . . . 1873
Lecky, Robert, . . . 1878
Meade, Richard H., . . . 1878
Miller, Polk, . . . 1878
Nesbitt, C. A., . . . 1878
Nolting, Adolphus W., . . 1870

Peirce, John W., ... 1873
Scott, A. A., ... 1873
Scott, William H., ... 1873
Wagner, Louis, ... 1873
Willis, Joseph N., ... 1873
Wood, Robert B., ... 1873

WEST VIRGINIA.

Charlestown.

Boggs, Esturn L., ... 1872

WISCONSIN.

Beloit.

Collins, Charles Frederick Gove, 1859

Fond du Lac.

Curren, Edward S., . . . 1869

Green Bay.

Cherot, Leonce, . . . 1865

Mazomanie.

Senier, Alfred, ... 1869

Milwaukee.

Drake, John R., . . . 1860

Prairie du Chien.

Wright, Edward M., . . 1869

Tomah.

Griggs, Osmon J., . . . 1869

DOMINION OF CANADA.

QUEBEC.

Montreal.

Gray, Henry R., ... 1867
Mercer, Nathan, ... 1867
Nelson, Wolfred D. E., . . 1870

ONTARIO.

Bradford.

Morgan, George Webster, Jr., 1867

Caledonia.

Walker, John A., ... 1873

Guelph.

Petrie, Alexander Bain, . . 1867

Hamilton.

Lawrence, Thomas, . . . 1867

London.

Moore, William Maurice, . 1866
Saunders, William, . . . 1860

Stratford.

Waugh, George W., . . 1862

Toronto.

Rose, Henry J., ... 1872

WEST INDIES.

BERMUDA.

Hamilton.

Heyl, James B., . . . 1868

CUBA.

Cardenas.

Cahill, John F., ... 1870

U. S. OF COLOMBIA.

Panama.

Herbruger, Florence C., . . 1867

NICARAGUA.

Granada.

Guzman, Horace, ... 1871

LIST OF DECEASED MEMBERS.

HONORARY MEMBERS.

		Elected.	Died.
Bache, Franklin, M.D.,	Philadelphia, Pa.,	1857,	1864
Boullay, Pierre François Guillaume,	Paris, France,	1868,	1869
Casselmann, Arthur, Ph.D.,	St. Petersburg, Russia,	1868,	1872
Durand, Elias,	Philadelphia, Pa.,	1857,	1873
Farrington, Thomas,	Boston, Mass.,	1856,	1867
Ludwig, Hermann, Ph.D.,	Jena, Germany,	1871,	1873
Robinet, Stephane,	Paris, France,	1868,	1869

ACTIVE MEMBERS.

		Elected.	Died.
Anderson, James H.,	New York, N. Y.,	1859,	1866
Bache, Charles L.,	San Francisco, Cal.,	1852,	1854
Backus, James W.,	Marine City, Mich.,	1867,	1870
Balmer, James,	Baltimore, Md.,	1856,	1866
Barry, John W.,	Baltimore, Md.,	1856,	1861
Baylis, William E. P.,	Brooklyn, N. Y.,	1860,	1872
Baynon, John,	Shreveport, La.,	1858,	1862
Benzinger, John Sylvester,	Baltimore, Md.,	1860,	1869
Bigelow, Francis O.,	Medford, Mass.,	1859,	1863
Bingham, John C.,	St. Johnsbury, Vt.,	1853,	1870
Billings, Samuel J.,	New York, N. Y.,	1860,	1865
Blair, Henry C.,	Philadelphia, Pa.,	1855,	1862
Blauw, Hippolyt A.,	Rochester, N Y.,	1856,	1870
Bowman, Henry K.,	Philadelphia, Pa.,	1869,	1873
Bright, James Evesson,	Worcester, Mass.,	1868,	1872
Bringhurst, Ferris,	Wilmington, Del.,	1862,	1871
Brown, John T.,	Boston, Mass.,	1859,	1860
Canavan, Benjamin,	New York, N. Y.,	1855,	1857
Carney, Charles Tibbetts,	Boston, Mass.,	1853,	1862
Caspari, Charles,	Baltimore, Md.,	1856,	1870
Churchill, George W.,	Chelsea, Mass.,	1865,	1869
Clency, William F.,	Cincinnati, Ohio.,	1859,	1865

		Elected.	Died.
Colby, Moses D.,	Boston, Mass.,	1859,	1870
Coon, Walter S.,	New York, N. Y.,	1858,	1861
Coppuck, Peter V.,	Mount Holly, N. J.	1857,	1869
Cressman, Noah,	Waterloo, Canada West,	1863,	1864
Cunningham, James E.,	Pittsburg, Pa.,	1860,	1863
Cushman, Alexander,	New York, N. Y.,	1858,	1861
Davies, Robert J.,	Brooklyn, N. Y.,	1858,	1872
De Motte, Henry A.,	Jersey City, N. J.,	1871,	1873
D'Evers, Henry Gaston,	Chicago, Ill.,	1865,	1870
Dodge, John P.,	New York, N. Y.,	1855,	1863
Easterbrook, Ray B.,	New York, N. Y.,	1858,	1868
Emanuel, Louis M., M.D.,	Linwood, Pa.,	1857,	1868
Everson, John C.,	Philadelphia, Pa,	1863,	1872
Fish, George B.,	Saratoga Springs, N. Y.,	1860,	1866
Fish, Henry F.,	New York, N. Y.,	1852,	1868
Forester, Richard,	Brooklyn, N. Y.,	1860,	1862
Gabaudan, Arthur W.,	New York, N. Y.,	1862,	1870
Gay, William,	Cambridgeport, Mass.,	1858,	1862
Gerhard, John C.,	Cincinnati, Ohio,	1862,	1866
Geyer, Andrew,	Boston, Mass.,	1853,	1855
Graefle, Frederick Alexander,	Baltimore, Md.,	1870,	1873
Groneweg, Louis,	Cincinnati, Ohio,	1864,	1866
Harbaugh, Valentine,	Washington, D. C.,	1856,	1871
Hegeman, Frederick Augustus,	New York, N. Y.,	1855,	1860
Hendel, Samuel D.,	St. Louis, Mo.,	1858,	1871
Hill, Henry E.,	Detroit, Mich.,	1866,	1868
Jardella, Jerome B.,	Vincennes, Ind.,	1865,	1870
Jenkins, William Ellis,	Boston, Mass.,	1865,	1869
John, Frederick L.,	Philadelphia, Pa.,	1856,	1864
Junghanns, Charles A.,	Cincinnati, O.,	1858,	1862
Keffer, Frederick A., M.D.,	New Orleans, La.,	1862,	1873
Kennedy, Robert C.,	Cleveland, O.,	1865,	1868
Kent, Asbury,	Cincinnati, O.,	1854,	1860
Kent, William,	Cincinnati, O.,	1864,	1867
King, Henry,	New York, N. Y.,	1858,	1867
Knapp, Edwin E.,	Norwalk, Conn.,	1860,	1862
Laidley, Joseph,	Richmond, Va.,	1852,	1861
Lane, James B.,	Fitchburg, Mass.,	1856,	1867
Leitch, Alexander,	St. Louis, Mo.,	1858,	1868
Lineaweaver, Kline Cyrus,	Washington, D. C.,	1864,	1873
Little, William B.,	Panama, U. S. Colombia,	1857,	1867
Longshaw, William, Jr., M.D.,	Bayou Sara, La.,	1858,	1864
Lyon, Charles H., Jr.,	Boston, Mass.,	1858,	1871
McDonald, John,	Brooklyn, N. Y.,	1860,	1861
McIntyre, Timothy C., M.D.,	Washington, D. C.,	1858,	1862
McPherson, George B.,	Cincinnati, O.,	1867,	1871

		Elected.	Died.
Massot, Eugene L.,	St. Louis, Mo.,	1857,	1871
Maxwell, James T.,	New York, N. Y.,	1855,	1860
Mayer, Ferdinand F.,	New York, N. Y.,	1859,	1869
Meakim, John (Pres. 1855–56),	New York, N. Y.,	1852,	1868
Metcalf, Tristram W.,	Brooklyn, N. Y.,	1857,	1878
Muller, William H.,	Chicago, Ill.,	1865,	1870
Nagle, John G.,	Baltimore, Md.,	1863,	1869
Nadand, James W.,	Cincinnati, O.,	1864,	1868
Norgrave, Samuel K.,	Pittsburg, Pa.,	1857,	1871
Olliffe, William J., M.D.,	New York, N. Y.,	1858,	1866
O'Brien, Joseph C.,	Baltimore, Md.,	1863,	1878
Osgood, Samuel W.,	Davenport, Iowa,	1858,	1860
Palmer, Albert G.,	Washington, D. C.,	1858,	1860
Parker, Herschel,	Brooklyn, N. Y.,	1867,	1870
Parrish, Edward (Pres. 1868–69),	Philadelphia, Pa.,	1852,	1872
Peck, Samuel P.,	Bennington, Vt.,	1858,	1859
Philbrick, Samuel R., M.D.,	Boston, Mass.,	1852,	1859
Phillips, Llewellyn,	Baltimore, Md.,	1856,	1865
Polhemus, James L.,	Sacramento, Cal.,	1866,	1867
Pollard, Charles P.,	Marysville, Cal.,	1859,	1869
Procter, William, Jr.,	Philadelphia, Pa.,	1852,	1874
Pyle, J. Lindley,	Brooklyn, N. Y.,	1859,	1866
Rehfuss, Lewis,	Cincinnati, O.,	1854,	1856
Reifsnider, William E.	Baltimore, Md.,	1864,	1872
Roberts, David,	Boston, Mass.,	1858,	1868
Rollman, Frederick,	Philadelphia, Pa.,	1862,	1864
Roemer, Daniel,	Cincinnati, O.,	1865,	1870
Sands, Jesse M.,	New York, N. Y.,	1860,	1867
Scully, Harmar D.,	Pittsburg, Pa.,	1858,	1866
Smith, Charles Augustus,	Cincinnati, O.,	1852,	1862
Smith, Edwin R.,	Monmouth, Ill.,	1862,	1869
Squire, William H.,	Germantown, Pa.,	1862,	1865
Steiner, Henry,	Philadelphia, Pa.,	1857,	1858
Stevens, Ashbel Mead,	Cincinnati, O.,	1854,	1860
Stevens, Rufus Walker,	Somersworth, N. H.,	1859,	1868
Sweetser, Thomas Augustus,	South Danvers, Mass.,	1859,	1860
Taylor, Robert J.,	Newport, R. I.,	1859,	1871
Taylor, William,	Philadelphia, Pa.,	1868,	1871
Thomas, William,	Jersey City, N. J.,	1855,	1856
Waite, Samuel B.,	Washington, D. C.,	1858,	1862
Warren, William,	Brighton, Mass.,	1867,	1871
Watson, William J.,	Brooklyn, N. Y.,	1858,	1872
Weyman, George W., Ph.D.,	Pittsburg, Pa.,	1858,	1864
White, Daniel F.,	Charlestown, Mass.,	1859,	1864
White, William P.,	Chicago, Ill.,	1865,	1866
Whitehead, Silas,	Lynchburg, Va.,	1856,	1858
Wilson, George C.,	Boston, Mass.,	1859,	1861

		Elected.	Died.
Wiseman, Charles,	Baltimore, Md.,	1856,	1862
Witzell, Louis,	Cincinnati, O.,	1864,	1867
Wood, G. Davidge,	Baltimore, Md.,	1856,	1863
Woods, Samuel H.,	Boston, Mass.,	1859,	1869
Wright, George,	New York, N. Y.,	1869,	1873

LIST OF RESIGNATIONS.

Names.	Residence.	Elected.
Brewer, William A.,†	New York, N. Y.,	1853
Carberry, P. Joseph L.,‡	Philadelphia, Pa.,	1870
Coggeshall, George D.,†	New York, N. Y.,	1852
Fitzgerald, John E.,†	Washington, D. C.,	1869
Glasier, George P.,†	Chelsea, Mich.,	1863
Hambright, George M.,†	Chicago, Ill.,	1865
McMurdy, Robert S.,†	Albany, N. Y.,	1861
Neal, Leander,*	Youngstown, O.,	1858
Simes, J. Henry C.,†	Philadelphia, Pa.,	1865

LIST OF MEMBERS DROPPED FROM THE ROLL.

Names.	Residence.	Elected.
Babcock, James F.,	Boston, Mass.,	1865
Bates, Louis A.,§	New York, N. Y.,	1869
Brown, James E.,	Louisville, Ky.,	1870
Callan James N.,	Washington, D. C.,	1857
Clock, Frank B.,	Boston, Mass.,	1865
Dickey, George S.,	Baltimore, Md.,	1859
Dows, Gustavus D.,	Boston, Mass.,	1865
Dyer, J. Howes,	Boston, Mass.,	1865
Edwards, J. Baker,	Montreal, Ont.,	1868
Fitzgerald, Joseph S.,§	Washington, D. C.,	1869
Giles, William M.,	New York, N. Y.,	1860
Greene, Henry S.,	Topeka, Kan.,	1869
Heinitsh, Edward H.,	Columbia, S. C.,	1867
Heisler, Jacob,	Vincentown, N. J.,	1868
Kiersted, Henry,	New York, N. Y.,	1858
Killam, Stewart,§	Galveston, Texas,	1871
Lowe, Charles H.,	Newton, Mass.,	1865
Mauss, Robert G.,§	Covington, Ky.,	1869
Onderdonk, William H. C.,	New York, N. Y.,	1867
Purdon, William H.,§	New York, N. Y.,	1871
Taylor, James S.,§	Cincinnati, O.,	1869

* Inability to attend the meetings. † Left the business.
‡ No reason given. § Residence now unknown.

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